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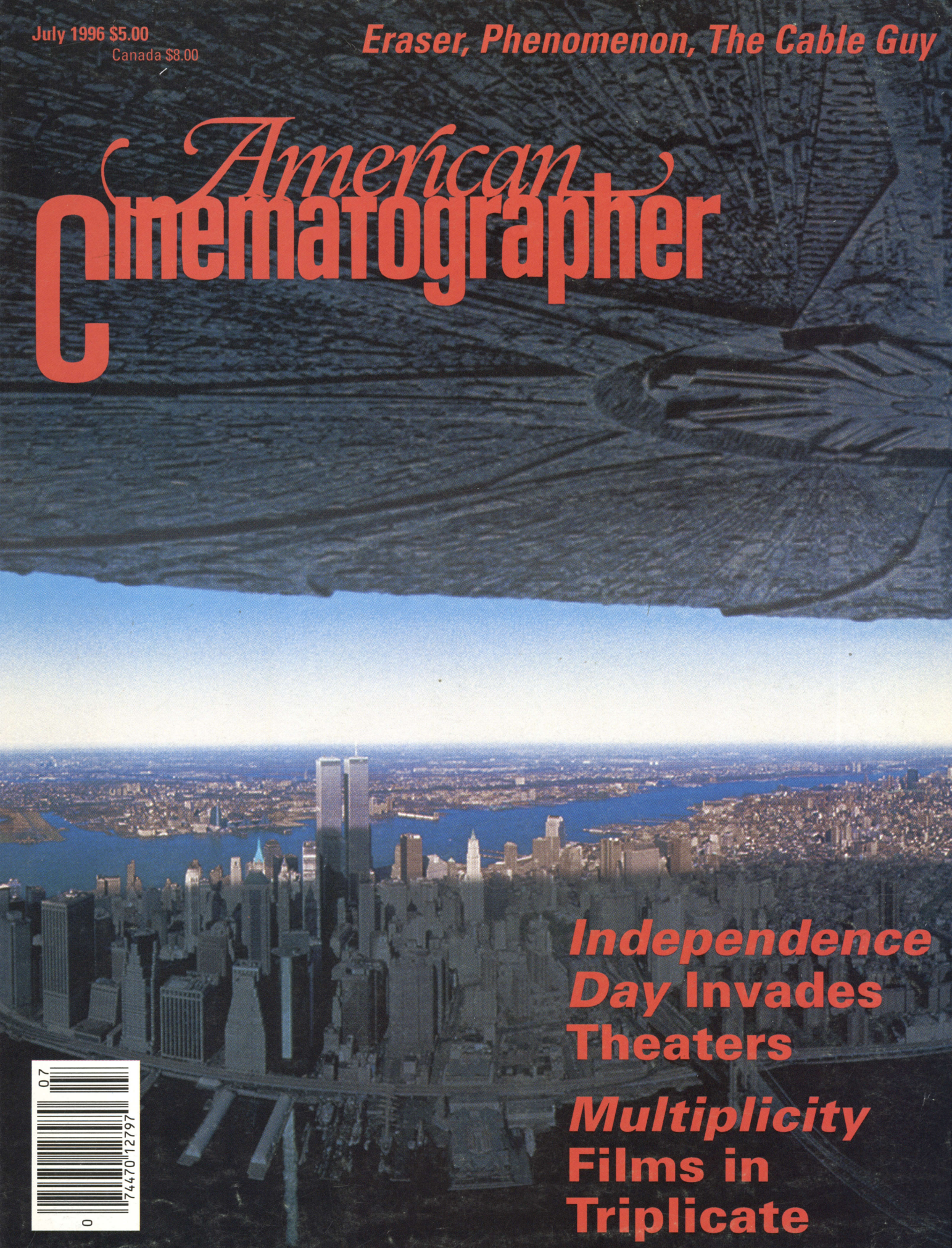

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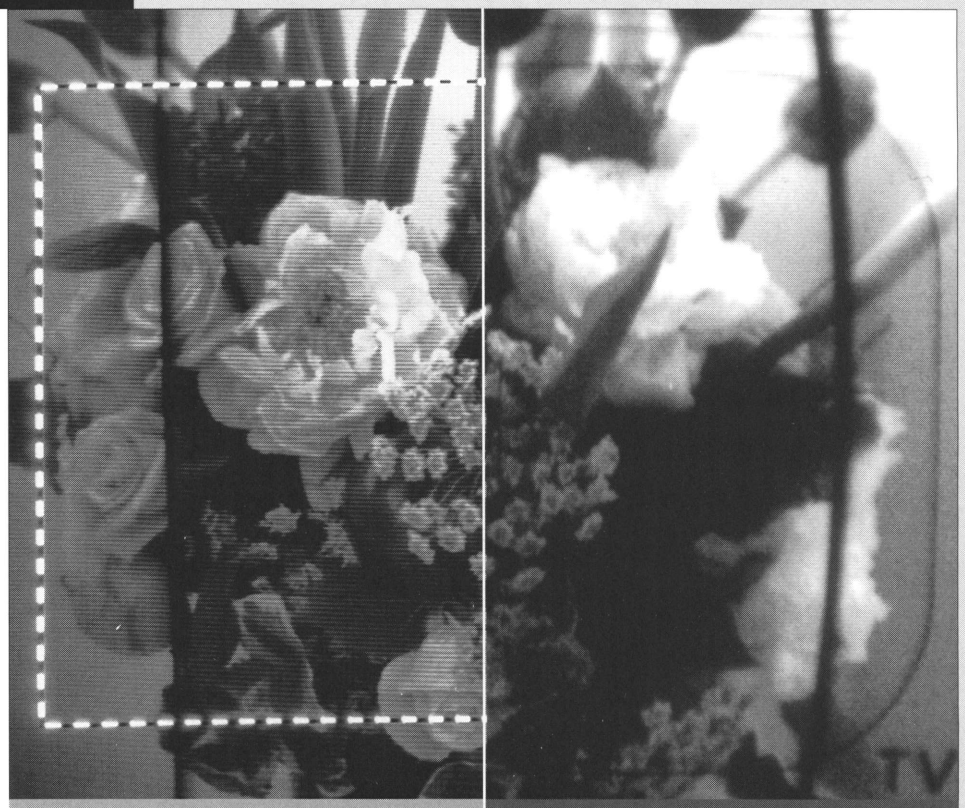

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July 1996 Vol. 77 No. 7

American Cinematographer

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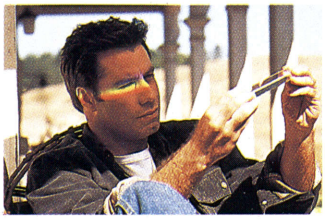

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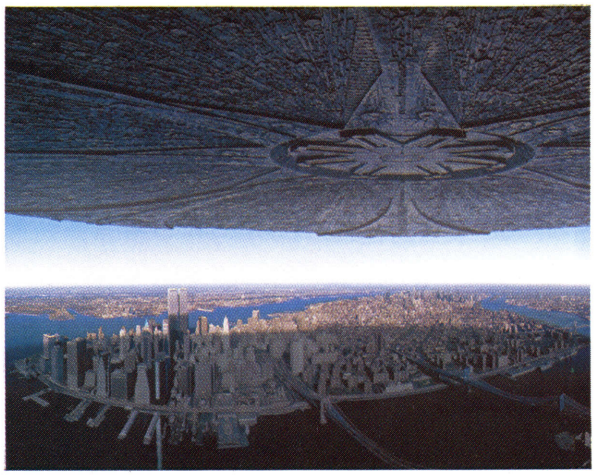
Departments



On Our Cover: An enormous alien Destroyer overshadows Manhattan, signaling the start of a full-scale invasion of Earth in the sci-fi epic *Independence Day,* directed by Roland Emmerich and photographed by Walter Lindenlaub, BVK. (Spacecraft element photographed by Anna Foerster and visual effects supervisor Volker Engel; digital composite courtesy of Twentieth Century Fox.)

Contributing Authors: Stephen Ashton, Rudy Behlmer, Karen Erbach, Michael X. Ferraro, David Heuring, Les Paul Robley, Eric Rudolph

American Cinematographer

July 1996 Vol. 77, No. 7

American **Cinematographer** (ISSN 0002-7928) established 1920 in 76th year of publication is published monthly in Hollywood by ASC Holding Corp., 1782 N. Orange Dr., Hollywood, CA 90028, U.S.A., 1-800-448-0145, 213-969-4333, Fax 213-876-4973. **Subscriptions:** U.S. $40; Canada/Mexico $55; all other foreign countries $65 a year (remit international Money Order or other exchange payable in U.S. $). **Advertising:** Rate card upon request from Hollywood Office. For **East Coast & Midwest sales (203) 761-9804, FAX (203) 761-0090, 387 Danbury Rd., Wilton, CT 06897.**

periodical-class postage paid at Tulsa, OK0 and at additional mailing offices. (All rights reserved.) Printed in the USA. **POSTMASTER:** Send address change to American Cinematographer Magazine, P.O. Box 2230, Hollywood, CA 90078.

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300 frames, PL mount: New high-speed, effects and production camera at Clairmont: the Wilcam W12

The W12 is a completely new HS camera, designed to do what *you* need done. It's not a modification of military instrumentation cameras based on 30-year-old technology.

The way instrumentation cameras are used, there's never an optical printer involved. But for *your* purposes, there often is. For perfect print steadiness, your camera's movement should be closely compatible with the printer's movement.

Same registration as optical printer

For example: instrumentation cameras can be built with as many registration-pins as the designer wants. (Some have eight.) But *your* camera should have the same number as the optical printer (two); and those pins should act on the same perfs (relative to the frame) as the printer's pins. The W12 has the same number of pins and they act on the same perfs. And, like the printer's, the W12's pins are full size.

Vacuum gate, film clip holder

In the gate, the W12 pressure-plate uses a vacuum back, for best possible film flatness. There's a registered clip holder at the groundglass. The shutter is fixed: 120 degrees. The mirror spins at up to 9,000 rpm, so it's made of Berylium—stronger and lighter (and more expensive) than glass.

Gentle takeup

With this camera, you don't have to take up film slack by hand. When you throw the Power On switch, after threading film, the W12's torque motors slowly take up the slack. The camera then goes into Standby mode and waits. When you throw the Run/Stop switch, the camera accelerates steadily to the set speed. 0 to 300 fps takes between 2 and 2½ seconds. 0 to 150 takes half that.

Even wrap

Once at the selected speed, sensor arms maintain even tension in the feed and takeup rolls as they change size. Regardless of speed, the wrap at the core is the same as the wrap at the outer edge. *No cinching.* Only a torque motor can provide this smooth a takeup.

Stops in about 16 feet

At the end of the roll, infrared sensors signal the camera to stop instantly. Mid-roll stops: from 300 fps, the W12 stops in about 16 feet. It also gets from 0 to 300 fps in around 16 feet. Consistent control; and *no wasted film.*

Magazines

All W12 magazines are identical 1000 footers, gear-driven by motors inside the camera body. Feed and takeup magazines are separate. You mount *two* on the camera body—a full one for feed, an empty one for takeup.

Choice of lenses

The W12's mirror takes up more space than standard mirrors. Nevertheless, there's a generous choice of lenses. You can use our 14mm Zeiss T2 and our six Zeiss T1.3 Superspeeds from 18 to 85mm (including the new T1.3 65mm). Among our spherical and anamorphic zooms, eighteen different types will work. In telephotos: twenty-two different types, from 150 to 1600mm.

PL mount advantages

You can color-match your W12 footage with your 535, Moviecam or 35BL footage. And you can save money by not having to rent a separate set of lenses.

System accessories

The W12 works with the ARRI mattebox and follow-focus. You can mount all the effects filters you're used to mounting on the ARRI 3. If you're also shooting with one of our sync-sound cameras, you can use the same accessory system you've rented for that camera.

No technician or AC power needed

Another way you save money is by not hiring a special operator/technician. The W12 doesn't need one. It also doesn't need AC power. It comes with a 48V battery that will run about 10,000 feet of film on one charge. Or you can yoke two standard 24VDC batteries together.

Rotating finder, upright image, video tap

The viewfinder system and video tap camera are enclosed within the camera body door. There's a knob with two eyepiece image modes: normal and ten times magnified. The viewfinder rotates through 270 degrees and the image stays upright.

29,600 speeds, all crystal controlled

You enter the speed you want on the camera's electronic control panel. The digital readout displays your choice, to two decimal places—hundredths of a frame. (Between 4 and 300 fps, you therefore have 29,600 speeds to choose from!) All with the perfect accuracy of crystal control; no problem with HMIs.

Variable speed

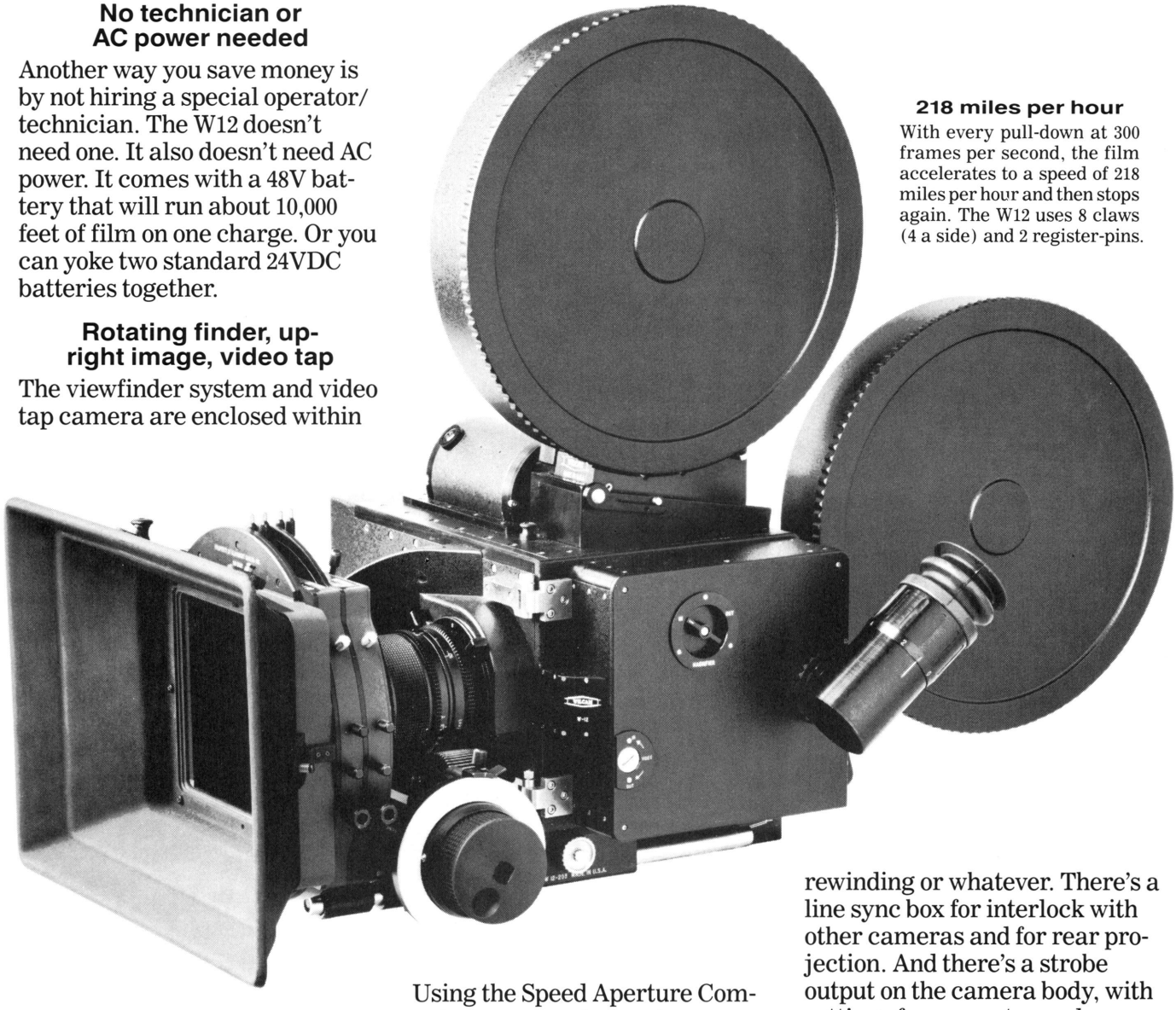
When you change speed during the shot, the transition is smooth. Using the Speed Aperture Computer, you can change from any speed to any other speed between 4 and 300 fps, in tenths-of-a-frame increments. The starting and ending speeds are crystal-controlled. And, of course, the lens iris is changed to keep exposure consistent.

Strobes, Remote and Interlock

Accessory connection is via the 19 pin Galloway Group Interface. With an accessory box, you can make precise frame counts, for rewinding or whatever. There's a line sync box for interlock with other cameras and for rear projection. And there's a strobe output on the camera body, with settings for one or two pulses for each pulldown/exposure cycle. There's also quartz-locked remote control.

218 miles per hour

With every pull-down at 300 frames per second, the film accelerates to a speed of 218 miles per hour and then stops again. The W12 uses 8 claws (4 a side) and 2 register-pins.



Doesn't brew coffee

There are a few things this camera *won't* do: It doesn't run in reverse; you can't shoot time-lapse, single-frame or time-exposure with it. And without a lens or film but with two magazines, it weighs 77 pounds; so you almost certainly won't want to hand-hold it.

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DVD: The New Digital Video Format

by Debra Kaufman

The era of the DVD (digital video disc) is fast approaching. After a considerable period of political and technological jockeying, electronic manufacturers and studios have agreed on a single specification for the next-generation format for video distribution in the consumer marketplace. Intended to replace VHS, its proponents believe that DVD will revolutionize video distribution here and abroad. For example, Alexandre Balkanski, president/CEO of C-Cube Microsystems (which designs and markets integrated circuits for digital video), states that the market opportunity for DVD will exceed $10 billion by the end of the decade.

Why the big brouhaha over DVD? The digital video disc looks exactly like an audio CD: a silver-toned disc, 5.25 inches in diameter, with a hole in the center. But whereas an audio CD can store a mere 680 million bytes of data, a digital video disc can hold up to 17 billion bytes of digital information. That translates to up to nine hours of high-quality video and six-channel audio. Just how high-quality? The DVD format keeps the luma and chroma information separate during transmission, and eliminates NTSC's bandwidth limitations.

DVD's audio scheme incorporates Dolby AC-3 Surround Sound, allowing for a true six-channel digital sound system: a center track for dialogue, left and right front tracks for music, two rear channels for effects and one bass channel. DVD players will include a Dolby ProLogic Surround Sound encoder to translate the AC-3 tracks into a format that can be played through a standard stereo amplifier or older Surround Sound system.

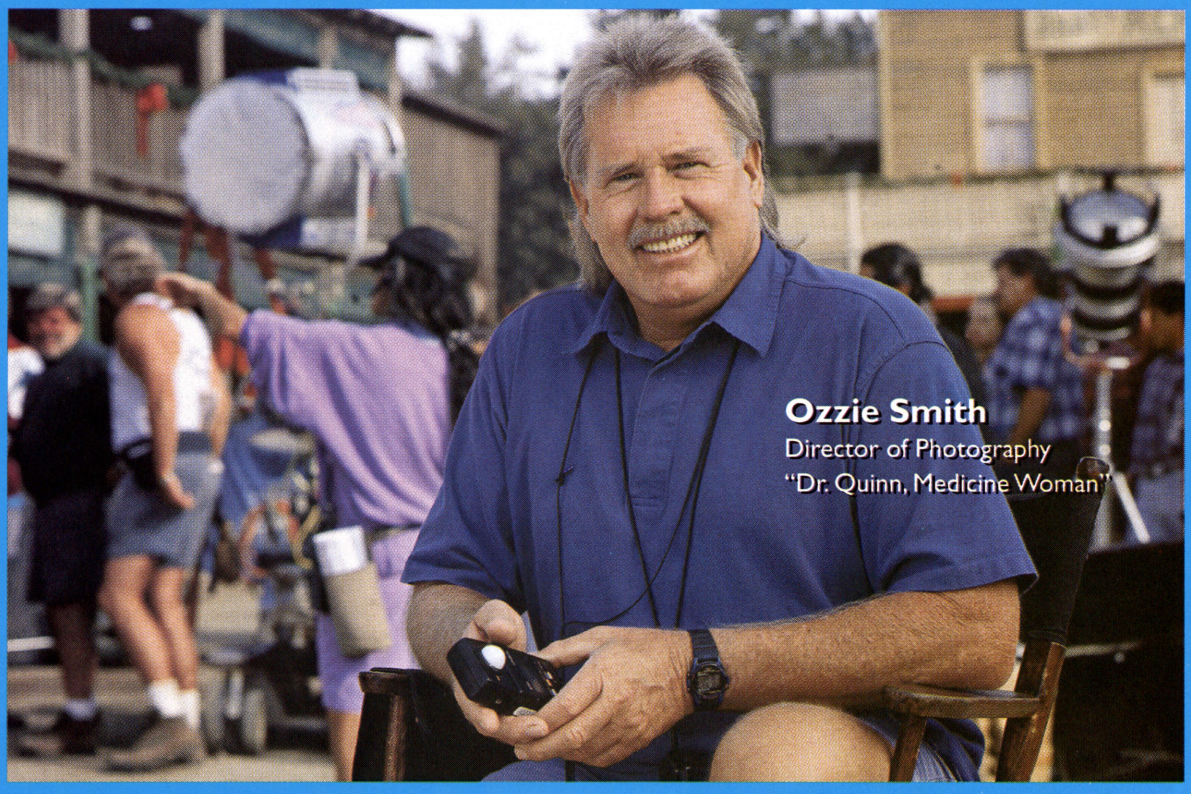
The digital nature of DVD also means that the new medium will be able to offer options that were not possible in the analog world. Movies will probably be the first application of the new DVD format. With DVD, the viewer will be able to see that rented movie in a 16:9 aspect ratio (that is, if he or she buys a forthcoming HD television set — otherwise, the DVD player will automatically letterbox or crop the picture).

Part of the excitement over the new format, however, is its interactivity and versatility. DVD's random access will allow "depth" — supplemental interviews, background information, and so on — to be created for any movie, as is currently done for high-end laserdisc presentations. In principle, such extra material could also include multiple endings to a movie or different camera angles for a football game, as well as interactive games. With six audio tracks, DVD can also support eight languages for a single movie, as well as 32 closed-caption tracks for subtitling or other uses. DVD also offers parental lockout and copy protection, as well as nifty ways for studios to make more money with various pay-per-view possibilities.

That's the good news. But, as always, there's no free lunch. All of the wonderful capabilities listed above involve inherent trade-offs with regard to length, image quality, the number of audio tracks, the level of interactivity, and other factors. Sonic Solutions recommends setting up a "Bit Budget" to allocate bits to the various DVD streams. And DVD is just as complex as it sounds when it comes to premastering and mastering. Producing a DVD requires preparation of video and audio, encoding, and authoring.

First, there's the video. An uncompressed (or "raw") feature film would require 10 DVDs or a compression ratio of 40:1. Digital video is compressed video, and MPEG-2 is the enabling technology for DVD. MPEG-2 (developed by the Motion Picture Experts Group) works

"Philips is my 'invisible partner' on 'Dr. Quinn.' "



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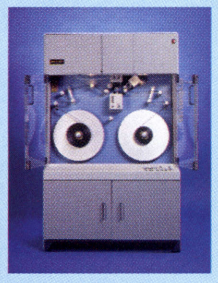

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by looking for changes, frame by frame, and removing as much of the unchanged information as possible. Thus, some frames (called I-frames or intra-frames) contain all the spatial information, while others (predictive frames or bi-directional frames) are compressed and contain much less information.

Crucial to DVD is variable bit-rate encoding, which takes into account the need for more "bits" (that is, information) for visually complex or rapidly changing scenes. Though there's always a trade-off between image quality and the amount of video/audio that can be put on a DVD, variable bit-rate encoding provides more flexibility in playing with the numbers.

To make video compression more successful, Sonic Solutions also suggests reducing noise (from grain, dust, or very detailed textures) by using a digital noise reducer or low-pass filter prior to encoding. That way, there will be less random information on the video stream, which will make encoding easier. Since MPEG-2 decoders can convert 24 fps MPEG-2 video back to 29.97 video, inverse telecine is also recommended to rid the video of redundant fields from the 3:2 pulldown in telecine.

Encoding video with the newly released Sonic DVD Creator system involves a preprocessing pass, during which the optimal bit rates for each frame is determined, resulting in an Encoding Decision List (EDL), and a real-time encoding pass when the EDL parameters are applied. The MPEG-2 video stream is recorded to hard disk, which may be accessed across a network by the authoring system, which lays out and formats the programming.

Premastering audio is also a complex step, mainly because DVD offers so many audio streams and options. The producer will have to decide how many bits to allocate to each audio channel, an allocation that will be constant since there is no variable bit rate for audio. AC-3 5/1 surround and AC-3 stereo are the compressed audio formats for NTSC DVD players (stereo PCM and MPEG-2 are alternates).

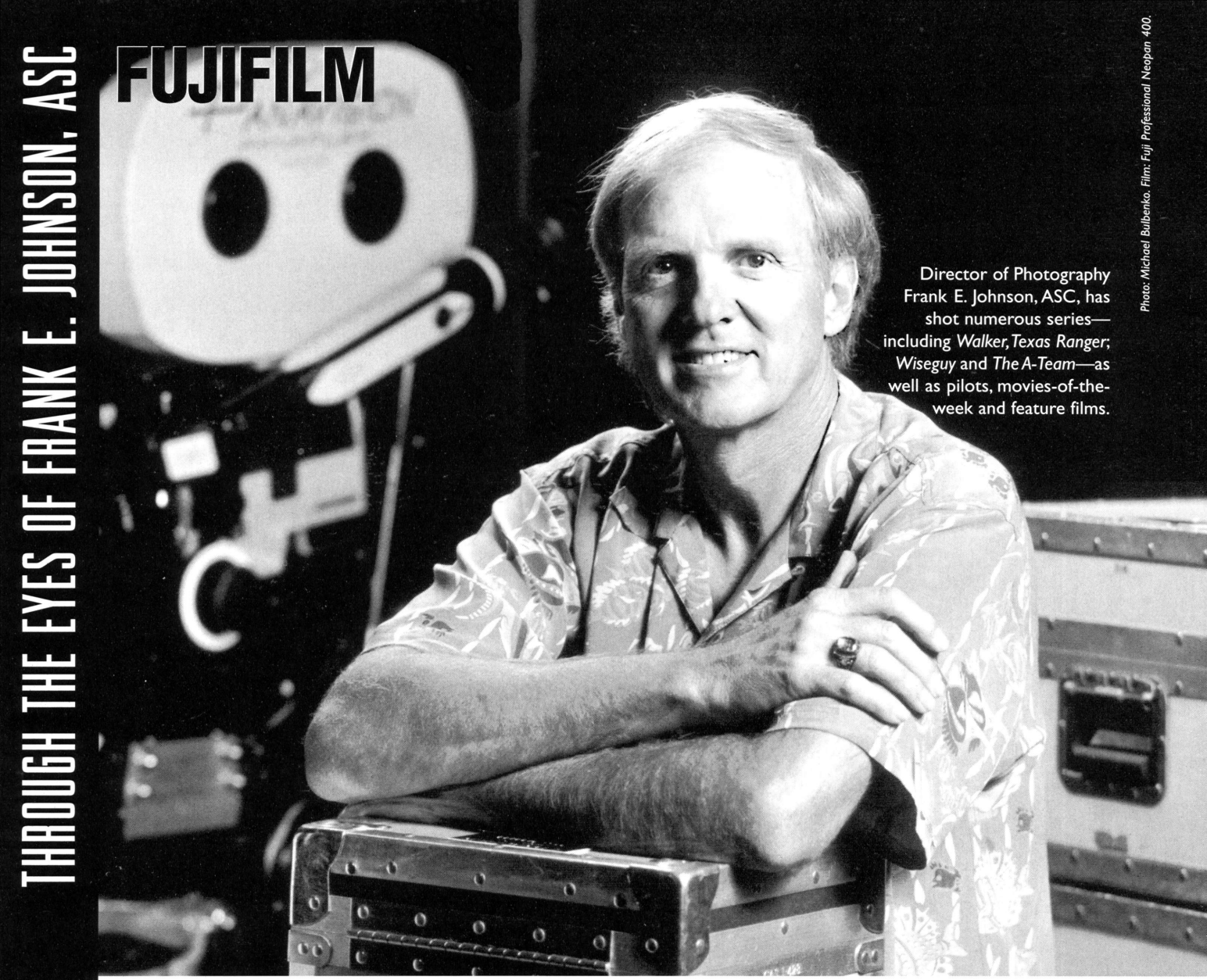
Authoring is the mystery step in the creation of a digital video disc — and the step that gives the new format its zing. Unlike a linear VHS, in which pressing the "play" button moves the tape forward and hitting "reverse" moves it backwards, the DVD requires software encoded on the disc itself in order to perform these or any other functions. In a sense, compressing the audio and video is just a preparatory step, one that results in raw material for the authoring process.

In the authoring process, the video and audio streams are assembled and synchronized, the title and menu pages are created, and the interactive elements are determined and laid out. All the audio, video, and subpicture data are combined into a single stream, a process called multiplexing. DVD simulation plays back the scenario to make certain that the content plays correctly; DVD emulation checks the DVD bit streams in a final quality check. After all this, the multiplexed stream is written onto a data tape with the "image" of the DVD, which is then dumped onto a premaster tape and sent to a manufacturer for duplication.

Though the ink isn't yet dry on the technical standard and legal issues that need to be resolved, DVD is already the focus of numerous manufacturers offering pieces of the DVD premastering puzzle. Chief among them at NAB '96 Multimedia World was Sonic Solutions, which showed "a complete premastering solution," DVD Creator, which the company claims is the first such complete system. C-Cube Microsystems will be coming out with a "chip-level solution" to be incorporated in other manufacturers' video encoding systems.

Postproduction facilities and studios are also gearing up. Beginning in May, the Sonic DVD Creator was installed at Advance Tech Entertainment, Crest National Video, Crush Digital Video, Ionic Digital, Laser Pacific, Patapsco Designs, Thomson Electronics, Warner Advanced Media Operation (WAMO) and Warner Bros. A C-Cube Microsystems spokeswoman says that manufacturers are already lined up to incorporate its chip-set, which will debut in Q3 of 1996.

As DVD goes into production, stay tuned to this column for an update. For more information now, check out the technical papers on DVD from C-Cube Microsystems (in Milpitas, CA) and Sonic Solutions (in Santa Clara, CA).



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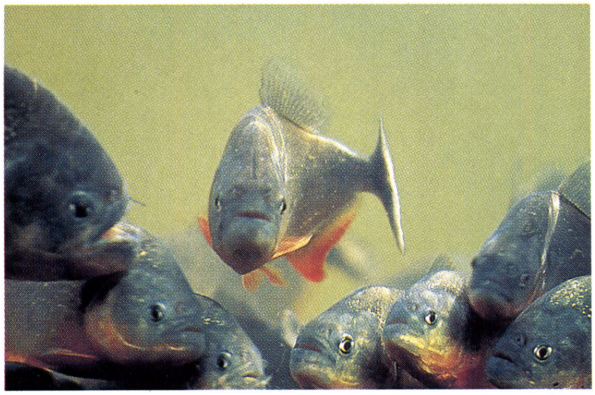
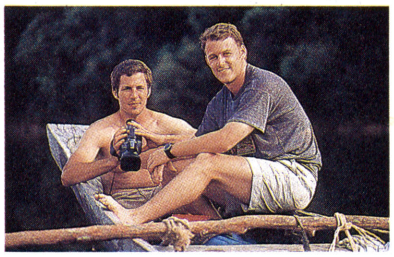
compiled by Andrew O. Thompson

Swimming with Piranha and the Sony DCR VX-1000
by Ed George

Shooting a documentary for the Discovery Channel concerning the schools of piranha infesting the rivers of Venezuela and Brazil sounded like an intriguing assignment, to say the least. Producer Wilda Rokos and writer/director Ronald Tobias, acquaintances of several years, approached me about the project, and after a scouting trip early last summer, we returned last February for an eight-week shoot. Scenes above the water were filmed in 16mm, but the underwater segments were captured on video. Our budget was rather limited and as using a film camera with video assist was a logistical and financial impossibility for us, video seemed to be the viable alternative. It worked well with an underwater housing and facilitated remote camera operation in such risky circumstances as the requisite piranha feeding frenzy. The use of the video also allowed us to immediately know if we were actually getting an acceptable image in water that was often very murky.



Photos by Ed George.



Above left: ***Face to face with*** **Pygocentrus notatus,** ***red-bellied piranha.*** **Above right:** ***Cinematographer Ed George paddling in a extremely tippy dugout.*** **Right:** ***Recent Montana State University film school graduates Sean Owens and Brian Lemaurreaux (assistants on the shoot) take aim with the backup DCR VX-1000 camera.***

Next came the task of assembling an underwater unit. A digital Betacam rig would have been the optimum choice, but it was too expensive and high-profile for our needs. But as fate would have it, some newly-emerging technology came along at just the right time. Dean Schnieder of Film Video Equipment Service Co. in Denver was raving about the image quality of the new Sony DCR VX-1000, a consumer camera that recorded on 60-minute 6mm digital cassettes. Recording on Beta SP, I shot a test in the Mile High City's South Platte River with the Sony LC999 lipstick camera in an underwater housing. I then shot with the DCR VX-1000 in an EWA bag and transferred it via an S-video line to the same Beta SP tape. The results were unquestionable: the three-chip DCR VX-1000 was definitely the way to go.

Now, all that was needed was an underwater housing for a camera that had been available for only a few months. I turned to underwater cinematographer Nick Caloyianis, with whom I had worked several years ago. He suggested that I check with the San Diego-based Gates Underwater Products. Luckily, owner Elywn Gates was finishing two prototypes for the DCR VX-1000, and agreed to sell us one. For our purpose, he added an underwater plug to the housing and fabricated a 50-foot cable that could be run to a Sony PVM 5041Q monitor. The Gates housing weighs 15 pounds and is slightly negative in water. It features both an optical dome port with a built-in .5 wide-angle lens adapter and optical magnifying glass for use with the electronic viewfinder through a diving mask. The controls allow one to shift between auto and manual iris and focus, adjust exposure, focus and zoom. There is also an in/out control for the color correction filter. (I used the latter with a Tiffen enhancing filter to catch the red coloration of the piranha.) The auto focus was perfect for close-up work, but when shooting wide I shifted to manual focus, usually set at infinity as I often utilized deadfall and vegetation in the foreground. The housing's handle mount is easily removable, and for remote operation I designed a three-section, nine-foot pole attachment.

Powering the DCR VX-1000 was our next concern. Due to a fire at the factory, only one battery was available per camera, and that would last for a mere 40 minutes. Purchasing a backup DCR gave us two batteries, but we were still skating on thin ice. Our solution came from Stuart Cody of Automated Media Systems in Allston, MA, who came up with a linear configuration of his LI77 Grabbit Expedition battery that would be able to run the camera for more than five hours. This would allow me to remain in the water and shoot continuously for up to an hour with no need to reload either the battery or the tape stock. Stuart then designed a solar array for battery charg-

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ing that enabled complete independence of AC power for the duration of the two-month production period.

Fashioned around a 30-watt solar panel connected to a regulator built into a plastic toolbox, the array has two charging positions. In the first, current flows to an auto battery; there are three dash lighter receptacles out of which I could charge an Arriflex 16SR battery, a Sony TCD10 Pro DAT battery and a DCR VX-1000 battery simultaneously. Excess energy is stored in the auto battery for night charging. In the second position, current flows into a motorcycle battery with one dash lighter receptacle. I used this to power the Sony monitor; an Expedition battery served as a backup. I mounted the solar panel on the roof of a bongo (a large dugout canoe) when on the rivers, and on the roof of a Toyota Land Cruiser when traveling through the Llanos area of Venezuela. This system didn't require that we lug around a heavy and disruptive portable generator. An important consideration of the solar array was that we had back-up Expedition batteries for all our equipment: my Arri SR, the underwater system and Michael McCallum's Sony DAT and Frezzolini camera.

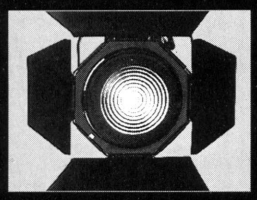
With this project's photographic logistics set in place, caution began to kick in. To achieve the fluid camera movement for which I was aiming, I knew I had to swim with the piranha. The small size of the DCR VX-1000 in its housing facilitated this total interaction. However, after a remote shoot (from the safety of a canoe) of a school of *Pygocentru notatus* (red-bellied piranha) scarfing a dead capybara, I realized that along with being a cameraman, I was also 155 pounds of red meat. It became a terrific exercise in mental discipline when frenzied piranha were swimming over, under and into my body while devouring a Peacock bass some three feet in front of my lens. I centered my attention on the magnified image at the housing's rear, checking focus, level, movement — sort of a technical version of burying my head in the sand. Gradually, I began to feel comfortable in my new surroundings — as long as I could see. During those times when I was swimming in a tea-colored river towards a floating mat of grass some 50 yards from the boat, the old fear of the unknown began to resurface.

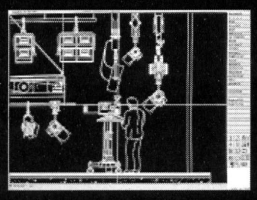
Due to our pre-planning, the shoot went off without a single hitch. The underwater unit worked like a dream. Several times, the DCR VX-1000 recorded a better image than that which I saw through my diving mask. In all, the use of a solar power array with backup Expedition batteries, plus the flexibility of the DCR VX-1000 with underwater housing (coupled with the ruggedness of the Arriflex 16SR for above-water shooting) allowed us to easily and quietly integrate into our subject's natural habitat, and offered a greater capacity to record their behavior.

Ed George, (520) 779-6140; Film and Video Equipment Service, (303) 778-8616; Gates Underwater Products, (800) 875-1052; Automated Media Systems, (617) 787-4313.

1996 Cannes Film Festival Honorees

British director Mike Leigh, best known for his unflinching, realist dramas, won the Palme d'Or at the 49th Cannes International Film Festival for his feature *Secrets and Lies*. The film's lead, Brenda Blethyn (*A River Runs Through It*), walked away with Best Actress honors for her portryal of Cynthia, a white Londoner suddenly reunited with the black daughter she gave up for adoption some years ago. *Secrets and Lies* also earned the International Critics Prize and the Ecumenical Award. Leigh's previous film, *Naked*, won him Best Direction kudos at Cannes in 1993. This year's winner in that category was Joel Coen for *Fargo*. The Best Actor award went to both Daniel Autueil and Pascal Duquenne, co-stars of *The Eighth Day*, a Belgian production directed by Jaco van Dormael. Danish director Lars Von Trier (*The Kingdom*, *Zentropa*) received the Grand Prize for his English language debut, *Breaking the Waves*. Canadian director David Cronenberg was given a Special Jury Prize "for audacity and innovation" for his adaptation of J.G. Ballard's controversial novel *Crash* (his fourth picture with cinematographer Peter Suschitzky, BSC). The Camera d'Or (for best debut film) went to Australian director Shirley Barrett for *Love Serenade*. Jacques Audiard captured the Best Screenplay nod for the French drama *A Self Made Man*. The Technical award (for sound and camerawork) went to *Microcosmos*, Claude Nuridsany and Marie Perennou's





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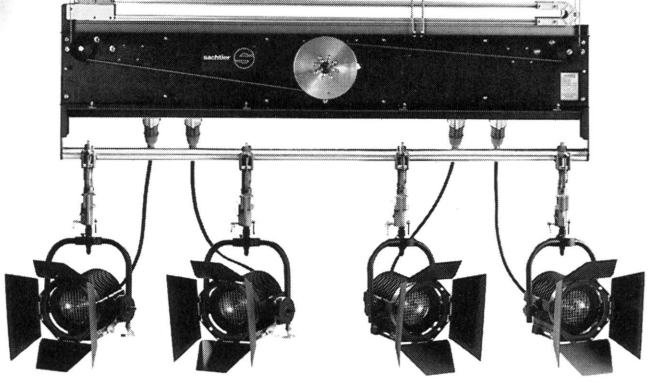

Lighting and Studio Technology

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insect documentary. Finnish director Aki Kaurismaki (*The Match Factory Girl*) received special recognition in the Ecumenical category for *Drifting Clouds*. The only other American filmmaker to be honored during the 12-day festival was Robert Altman. Though his 1930s drama *Kansas City* was shut out of the awards, the director himself was presented with France's most revered artistic distinction: the medal of the Chevalier of the Legion of Honor.

Babe Cinematographer Honored By ACS

Andrew Lesnie, ACS, the director of photography on Chris Noonan's award-winning *Babe*, was presented with the "Milli" award at the Australian Cinematographers Society's 27th Annual National Awards, held on May 4 at the Warner Bros. Movieworld Theatre on Queensland's Gold Coast. Lesnie also earned the ACS's top award last year for *Temptation of a Monk*. The cameraman began his career in news, current affairs and documentaries before taking the leap into feature films. His feature credits include last spring's romantic comedy *Two if by Sea*, starring Sandra Bullock and Denis Leary.

ACS (President Milton Ingerson), 08-338-1666, FAX (08) 338-2510.

Pumping Up the Volume for Alien Invaders

Grand Central Soundworks (GCS) created various in-studio audio effects for the science-fiction epic *Independence Day*. The film's co-writer/director, Roland Emmerich, had previously worked with the Hollywood design company on *Stargate* and *Universal Soldier*. GCS's sonic contributions to *ID4* include Stealth bombers on attack, a 150-strong Winnebago refugee caravan careening across the Bonneville salt flats and a mammoth alien Destroyer obliterating the White House. Their favorite trick for the film was creating the sound for the aliens' "wall of destruction," an apocalyptic firestorm that descends from the heaven to engulf entire metropoli. The GCS team had to create the audio effects to match visual special effects that at the time were only 20% complete. Preliminary recordings were made of jets and engines at San Diego's Top Gun school and military vehicles on the film's Utah location. Foley artists mixed such audio ingredients as heavy stone crunchings, metallic shriekings, baboon screams and killer whale calls. Founded four years ago by Val Kuklowsky and Sandy Gendler, GCS credits include *Tank Girl*, *CB4*, *Dazed and Confused* and *Unforgettable*.

Grand Central Soundworks, (213) 848-8620.

SMPTE Holds Technical Conference Stateside and Overseas

The Society of Motion Picture and Television Engineers has announced the lineup of its technical program for the Society's annual fall conference, to be held October 8 – 12 at the Los Angeles Convention Center. The conference carries the theme "Film and Video Synergies: Creation to Delivery." Attendees to the conference will have access to three full-day seminars on topics such as "Compression, Non-Linear Editing Systems" and the "New Theatrical Experience." Sessions scheduled for the conference include "The Digital Virtual Studio," "Widescreen Issues for Film and Video" and "DVD Authoring: A New Technology." HDTV '96 will co-sponsor a two-day workshop focusing on all aspects of High-Definition Television, including signal processing, storage, transmission and compression. The keynote address will be given by Chris Cookson of Warner Bros.

In conjunction with the Montreux International Televisions Symposium (ITVS), the European section of the SMPTE will hold a conference on Imaging Media from September 19 – 21 at the Congress Center East in Cologne, Germany. The four lecture sessions of this year's conference are dedicated to the connection between modern information and communication technology with film and television technology. Over the first two days, sessions are planned to have the following themes: "Image Acquisition and Processing," "Digital Imaging for Film and TV," "Image Display Techniques and Tools for Multimedia Production & Services." ITVS will arrange an all-day tutorial/workshop entitled "Bitrate Reduction Versus Picture Quality." Every session will conclude with a podium discussion; all contributions will be held in English and German and interpreted simultaneously. Professor Aleksander Todorvic, Director and

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Dean of the International Academy of Broadcasting, will be the keynote speaker for the opening session.

SMPTE U.S. (John Izzo), (914) 761-1100, FAX (914) 761-3115.

SMPTE Germany (Rolf von Kaldenberg), 5143/93555, FAX 5143/93556.

Jane Campion's Debut Feature Gets U.S. Theatrical Release

Milestone Film and Video has announced the U.S. theatrical release of *Two Friends*, the debut feature by Jane Campion, director of *An Angel at My Table*, *Sweetie*, *The Piano* and the upcoming *Portrait of a Lady*. *Two Friends* received the Australian Film Institute's awards for Best Television Movie, Director and Screenplay. When shown at the 1986 Cannes Film Festival along with her three other shorts, cineastes worldwide heralded the new feminist voice of the New Zealand director.

Written by Australian novelist Helen Garner, the film begins in the present, when a pair of once-inseparable 15-year-old girlfriends have grown apart. Schoolgirl Louise (Emma Coles) gets good grades but has a love-hate relationship with her divorced mother. Kelly (Kris Bidenko), a punkette with bleached hair, hangs at the beach with her pals, experimenting with drugs and casual relationships. Over the course of five episodes, the film moves backward in time to reveal the subtle changes that sent the two friends on different paths.

Says Campion, "The material in the script was so good that I didn't have to prop it up; I just let it speak. I decided to make a film with a series of wide shots and very long takes, with the camera in a fixed position. There are no connected close-ups and [the film has] very simple editing — just scenes connected together. We're not trying to say 'here's an important moment' and then go for a close-up. The audience can choose what to focus on."

Despite its rave reviews, the film was never released theatrically. Its silver screenings were limited to Cannes and a film festival held in Campion's hometown of Wellington. By the time Milestone licensed *Two Friends*, the sole 16mm 76-minute print (struck in 1986) had been scrapped due to its poor quality. With the help of the film's producer, Jan Chapman, and its editor, Bill Russo, the Australian Broadcasting Corporation made a sparkling new interpositive off the original camera negative, masking it to bring back the 1:85:1 aspect ratio that Campion had intended. Milestone then made a new optical soundtrack from the original magnetic tapes with the help of New York sound lab Zounds. Pennsylvania's Cinema Arts worked on the internegative. This restoration project took almost six months. New York's Film Forum had the theatrical premiere of this fully restored drama on April 26. *Two Friends* will be released nationwide on a region-by-region basis through the summer.

Founded in 1990, Milestone has re-released restored versions of several films, including Luis Bunuel's *Young Ones* and Michelangelo Antonioni's *Red Desert*. The company is best known for rediscovering, acquiring and distributing "unknown" classics such as Mikhail Kalatozov's *I Am Cuba*, Pier Paolo Pasolini's *Mamma Roma* and Alfred Hitchcock's "lost" propaganda films *Bon Voyage* and *Aventure Malgache*.

Milestone Film and Video, Inc., (212) 865-7449; FAX, (212) 222-8952; e-mail, MileFilms@aol.com.

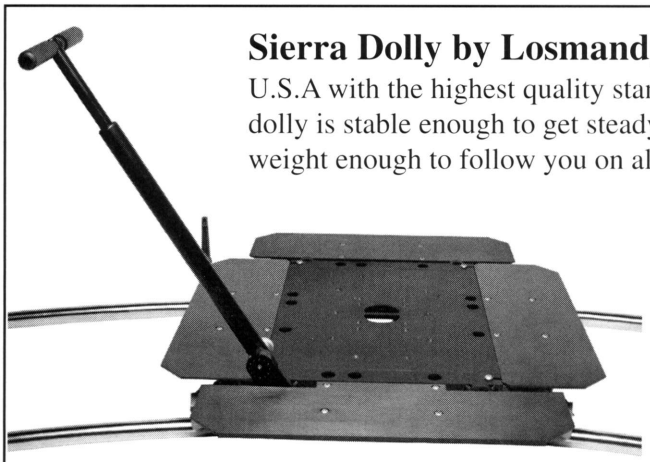
Encore Opens New L.A. Venue

Encore, a 12-year-old Hollywood, CA-based postproduction facility, recently expanded its operation to a new $15 million, 22,000-square-foot complex in downtown Santa Monica. The two locations are linked electronically through fiber optics.

"There were two main purposes in opening a second facility," reports president Larry Chernoff. "First, we wanted to re-establish Encore as a leader in the video postproduction industry. Second, we needed a venue to focus attention on special effects."

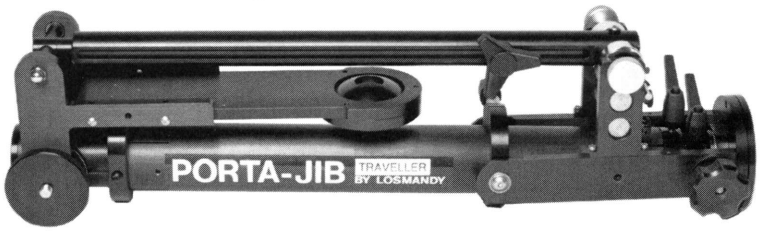
Chernoff envisions Encore as being able to provide storyboard consultancy services and on-set digital

New from Birns & Sawyer:



Sierra Dolly by Losmandy: New portable dolly designed for location. Manufactured in the U.S.A with the highest quality standards, this dolly is entirely machined out of aluminum. The Sierra dolly is stable enough to get steady shots with a jib arm, strong enough to last a lifetime and light-weight enough to follow you on all your shoots.

Porta-Jib Traveller:
(Below) This new portable jib arm folds from a total over all length of 116" down to an amazing 31" and weighs only 35 lbs. The arm telescopes out.



In addition to the Sierra Dolly and the Porta-Jib Traveller, we will display the **Losmandy studio Dolly, the Standard and Mini Porta-Jibs, and the Dual Porta-Jib** that eliminates the arcs.

PT-01 Video Headset: Displays your NTSC or PAL video-assist image in front of your eyes.

Hydraulic Cameleon Dolly: Pictured left with new electric hydraulic system.

Phantom Crab Dolly: The Phantom is the first crab dolly with electric hydraulic straight boom under $20,000.00.

Jurgen's SR3 Video-Assist and Flicker-free color camera: Jurgen will demonstrate his new SR3 video tap and his modification of the C.E.I flicker-free color camera.

Universal Track Wheels: Lift your dolly onto the Universal Track Wheels and away you go onto either round or square, straight or curved track.

Smaller Weaver Steadman 3 Axis Head:
For camera packages under 36 lbs.

Two new Director's Finders: We now carry 6 finders from $229.^95 to $1625.^00.

New VF-1 Wireless Video Finder: The first director's finder with a color video tap and built-in wireless video transmitter!

Cine Power Batteries & Chargers: New revolutionary technology! Chargers, belts and blocks of the future.

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effects supervision, in addition to the execution of the visual effects themselves "for commercials, long-form projects and ultimately feature films."

The new facility continues Encore's tradition of offering its clients the very latest and best equipment, including such digital effects tools as Discreet Logic's Inferno and Flame; Quantel's Henry; various programs from SoftImage; and Lightwave 3D on DEC Alpha, all networked using Windows NT.

Encore, Tony Schmitz, (818) 985-4516.

Daviau and Irola Speak at L.A. Independent Film Festival

ASC members Allen Daviau and Judy Irola each conducted sessions of Kodak's Close-up Series at the Second Annual Los Angeles Independent Film Festival held from April 18 – 22. Irola, a long-standing member of the indie film community, gave an informal talk about her career, particularly her start in documentaries.

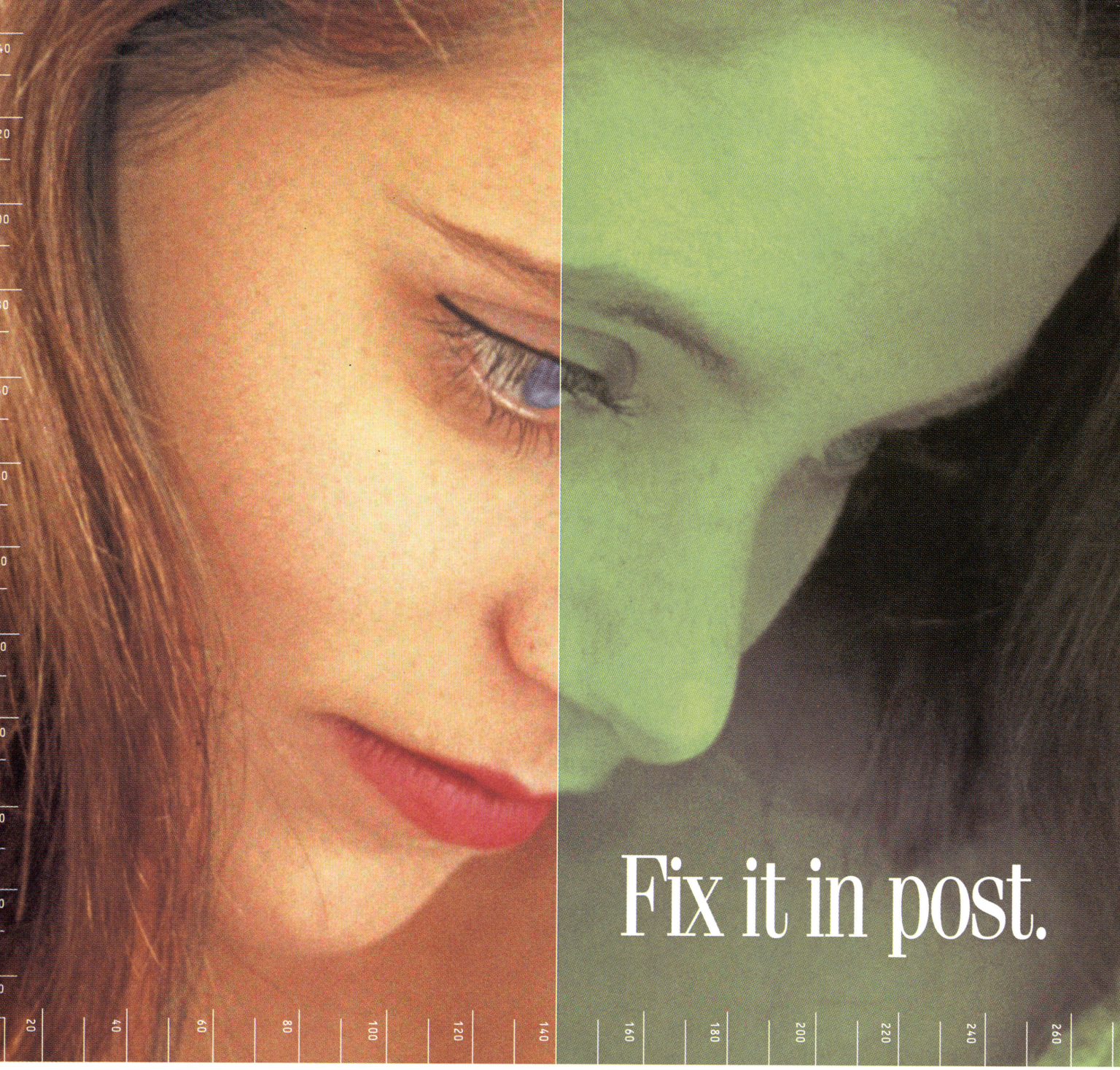
Daviau, along with PRO-TEK representative Rick Utley, held a session on film preservation. Topics discussed included the adverse effects of temperature and humidity. As part of the presentation, clips were shown from the recently-restored *Picnic* (1956), photographed by James Wong Howe, ASC.

Fujinon Lenses Run Court

Thanks to New Orleans-based YES Productions and Fujinon lenses, millions of viewers had a perfect look at how the top-ranked Kentucky University basketball team (the eventual NCAA champions) lost in the finals of the Southeastern Conference tournament.

The basketball tournament, held in the Superdome, was the latest test YES gave its new Fujinon 9.5 to 66mm and 8 to 20mm lenses. Getting tight shots of the facial reactions, as well as full-court shots, was a challenge for Jim Moriarty, vice-president and general manager of YES Productions.

Moriarty used four Ikegami KH 366 cameras with 9.5 to 66mm lenses — two at center court and one at the latent positions. A camera placed in the Superdome's upper deck allowed Moriarty to get wide-angle shots and full frames on the basket. The 8 to 20mm lenses were on three Ikegami HL 57 courtside cam-



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eras; they were also used for close-ups on coaches and players. "The production people liked the lenses' ability to get up close with the tight shot," says Moriarty.

Fujinon, (201) 633-5600, FAX (201) 533-5216.

Digital Film Recorder Boosts Animation Quality

DreamWorks SKG has installed a Kodak Lightning digital film recorder at their Los Angeles animation studio, which is currently producing *The Prince of Egypt,* an animated feature directed by Brenda Chapman, Steve Hickner and Simon Wells.

"First of all, we'll be able to render frames at a much higher rate than with a CRT film recorder," says ASC Associate Member Rob Hummel, an overseer of image technology implementation for the company. "Secondly, we'll have the advantage of being able to record directly to Eastman EXR color intermediate film 5244 as our original camera negative."

The Lightning digital film recorder uses a high-intensity gas laser to accurately replicate the digital image data as an analog image; all of the subtleties that contribute to a filmic look (color and contrast range, resolution depth) remain intact. It is the only commercially available film recorder designed for use with the intermediate film.

According to Aidan P. Foley, general manager and vice-president for Kodak Digital Imaging, the Lightning is capable of producing color intermediates with incomparable image quality, and is designed for use at facilities with extremely high film output. In the past, these types of recorders were used primarily for visual effects and other applications involving comparatively small lengths of film. By contrast, every frame of *The Prince of Egypt* will run through the Kodak recorder.

CCS (Alison Hofland/Megan Inglesby) (619) 438-5250, FAX (619) 438-5230, e-mail CCSPR@aol.com

Correction

In our recent coverage of the Sundance Film Festival (*AC* April '96), we mistakenly referred to the film *Minotaur* as being "unreleased" (p. 90). In fact, the arty, offbeat film did have a brief theatrical run. *AC* regrets the error.

ANGENIEUX ZOOMS IN

Denny & Terry Clairmont on the Angenieux 25-250HR.

As usual, Clairmont Camera is humming. Today over two dozen rental packages will be prepped and out the door.

The world's most meticulous cinematographers trust the Clairmont brothers—Denny and Terry—to provide the finest cameras and lenses available. So which zoom is most in demand at Clairmont?

"The Angenieux 25-250HR," answers Terry. "Without a doubt, it's the top lens in its class."

"The resolving power of the HR is incredible—all the way through the range," Denny explains.

"And through nearly two years of rentals, the Angenieux 10-to-1's have proven to be really durable—whether on a sound stage or on location."

Terry glances at the busy scheduling board behind him. Every HR slot is filled. "It's the lens they're are asking for. So we just ordered another 31 HRs to go with our shipment of new cameras."

"That doubles our HR inventory," adds Denny, "You might say we're committed to the lens."

In a minute Terry turns back to the scheduling board. Denny heads to the projection room to check out some new lenses.

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Sharpen the Saw: Ingenuity and Experience Fuel First Feature

After learning from the masters, Philip D. Schwartz gets the chance to demonstrate his skills as a director of photography.

by David Heuring

Film clips courtesy of Philip Schwartz.

Using borrowed law offices as sets, the filmmakers had to carefully correct the on-camera windows for daylight interior scenes, and also work out an elaborate "night-for-day" lighting scheme for other sequences.

SHARPEN THE SAW IS THE AUDACIOUS first feature of co-producers, co-directors and co-writers Scott and David Hillenbrand. The brothers took many risks to get the film made — maxing out an alarming number of credit cards and calling in every favor possible — but when it came to choosing a director of photography, they weren't taking any chances. After looking at over 100 reels and interviewing at least 50 prospective cinematographers, they called Philip D. Schwartz, who was in Salt Lake City operating on the CBS miniseries *Nothing Lasts Forever*.

Schwartz agreed to take the job on the spot. The Hillenbrands had seen the cameraman's work on shorts, second-unit jobs and commercials, and the subsequent interview had gone well. Schwartz was full of ideas on how to execute the film while saving money, and had brought detailed script notes to their meeting. However, he had never before served as director of photography on a feature film.

As it turned out, having Schwartz on the set was like marshalling the combined wisdom of 15 or 20 seasoned directors of photography, as well as an experienced operator. He had spent the previous 20 years serving on the crews of some of cinematography's brightest lights, and he had obviously paid attention. Throughout the production of *Sharpen the Saw*, the cameraman applied the experience and ingenuity he'd absorbed, and the result is a limited-budget film that looks like a commercial studio feature.

Prior to his career in film, Schwartz had been earning Ds at Cornell University's school of engineering school . After transferring to Cornell's College of Arts and Sciences, a "History of Cinema" course captured his attention.

It was the late Sixties, and after graduation Schwartz headed west to San Francisco "with a suitcase and a record player," where he landed a job working for the legendary (in some circles) Greg Snazelle. Schwartz picked up practical knowledge in the basic skills of filmmaking, beginning with making coffee. He learned every facet of the process, and he also learned that his true affinity was for the camera.

Schwartz eventually moved to Los Angeles, where his first job was as second assistant to Gerald Hirschfeld, ASC on *Young Frankenstein*. The move up to first assistant came four years later, on *Black Sheep Squadron* under John Elsenbach, ASC. By 1988 Schwartz was operating A-camera on Hollywood features, network MOWs and miniseries. Along the way, he assisted or operated for ASC members John Bailey, Adam Greenberg, Jack Green, Andrew Laszlo, Fred Schuler, Jordan Cronenweth, James Bagdonas and Tom Del Ruth, to name just a few.

"Tom was the first guy I ever saw who combined hard light and soft light out of the same instrument on an actor in one shot," recalls Schwartz. "The first time I saw him do it I thought that the grips had made a mistake. He had the diffusion paper come halfway down the 5K Fresnel for the soft light on the face, while the paper didn't cover the light hitting the wardrobe. I saw that, and very quietly asked Tom if it was what he wanted, and he said, 'Yeah, absolutely, look what it's doing.' And sure enough, I saw this wonderfully soft wrap-around light on the actor's face and this rake of hard light across his wardrobe to accent the texture in the clothing. That's a lesson I applied often on *Sharpen the Saw*."

With a 124-page script, very little time and less money, Schwartz and the Hillenbrands knew that the key to success would be meticulous planning. The entire script was carefully scheduled and storyboarded, and every location was scouted months in advance, taking into consideration blocking,

lens choice, movement and time of day. The production couldn't afford a generator, so power sources had to be arranged at each location.

Along with Schwartz, gaffer Ron Sill and key grip Scott Reiniger made a secondary "tech scout" a couple of weeks prior to shooting. As HMIs were not affordable, light sources would be 3200°K or sunlight corrected to 3200°K. The trio made careful notes detailing which windows would need to be tented, blacked out, gelled or covered, and discussed the logistics of each setup.

Another major time-saver before the start of principal photography was the decision to shoot all

Left and below: ***Schwartz lent ambience to the film via the use of classic noir lighting touches. He kept a very light net behind his lens throughout the film, and used various densities of Tiffen's black ProMist filters to take the edge off the images while maintaining rich blacks and shadows.***

computer-screen inserts — which figure prominently in the story — weeks prior to the actual shoot. The carefully designed text and graphic screens were displayed on an SVGA monitor modified to display 24 frames per second and shot with a 24-frame film-to-video sync box. This precluded showing the screens and actors in the same frame, but the time and money saved more than made up for that limitation.

The film itself tells the story of four disillusioned "Generation X" employees who devise a plan to overthrow the corrupt bosses at their company, "NXI, Inc." More than half the film takes place in the firm's offices. Luckily, the Hillenbrands secured the night and weekend use of their father's law offices — on the 13th floor of a Miami high-rise — as the primary location. Large daylight interiors were shot on the weekends, but some shots required a "night-for-day" approach that involved re-creating ambient sunlight.

Close to 100 cool-white fluorescents were exchanged for Optima 3200°K corrected fluorescent bulbs, which matched the Kino Flos, 650-watt tweenies and 200-watt MiniMoles that made up the additional lighting. The four-foot "two-bulb" and two-foot "single" Kino Flos were easily mounted on the acoustical ceiling supports with "helicopter clips."

Ironically, the day interiors proved more difficult. For these shots, every window had to be corrected for the incoming 5600°K daylight. According to Schwartz, "We made the decision to use both Rosco 85 and neutral density .60 hard acrylics on the on-camera windows, rather than take the time and expense to carefully apply Rosco Sun 85 gel and then fight its tendency to ripple."

Instead, the hard acrylics were mounted into frames that fit into the on-camera windows. The black borders of the frames blended into the office's architecture and could easily be lifted out and moved to another part of the office for the next setup. As the intensity of the sun dropped, the ND .60 could be pulled, leaving the 85 acrylic in place to balance the interior light levels.

"Adam Greenberg [ASC] had used a similar technique," Schwartz says. "It worked perfectly, and even though the acrylics are initially more expensive than gel, they saved us a lot of time and money over the course of the shoot."

The team's camera package consisted of a Panaflex G, a Primo 17.5-75mm T2.3 zoom lens, and five older SuperSpeed primes for handheld work. Three 1000' and three 500' magazines, a Panahead, an O'Connor 100, a small complement of filters, a Fisher 11 dolly, and standard and baby legs rounded out the package.

The Primo zoom was initially deemed too expensive, but Schwartz was able to convince the Hillenbrands that there was another, less critical piece of equipment to give up in favor of the zoom — the video tap. "After our tech scout, I realized that the

The camera crew sets up an ambitious 270-degree dolly shot that will circle around the perimeter of the outdoor Jacuzzi. Keylight was provided by a Chinese paper lantern with a Photoflood inside, and Schwartz created kicks on the actors' faces by aiming 2K Par lights straight down into mirrors beneath the water. From left are key grip Scott Reineger, Schwartz (at camera) and first assistant Peter Farber.

17.5mm end of the zoom was absolutely necessary in some of the cramped offices and conference rooms," says Schwartz. "Also, the Primo zoom was almost a full stop faster than the alternative, the T3 20-100. Smaller and fewer lights could be used with the Primo.

"It wasn't an easy sell," the cinematographer recalls. "David and Scott were hesitant, to give up the video tap, but I think my operating experience, in addition to the scores of hours of preproduction meetings, helped sway them."

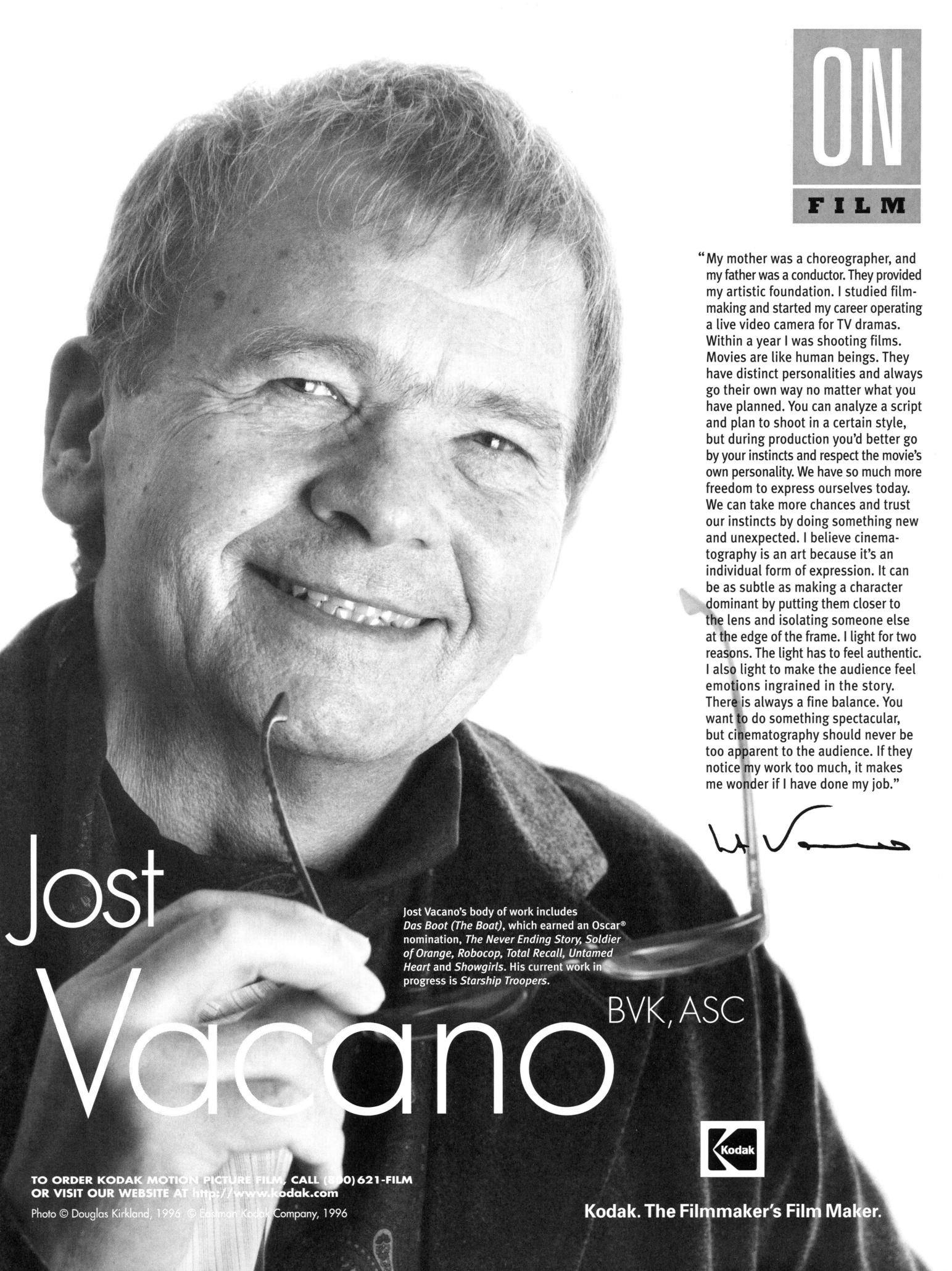
Schwartz also held firm on the choice of film stock. He says that his selection of Eastman EXR 5298 for interiors and night exteriors, and Eastman EXR 5248 for day exteriors, was "non-negotiable." Schwartz rated the 5298 at E.I. 400, a tactic he learned from Jack Green, ASC. "The 98 gave me bulletproof blacks and the honest, grain-free rich tone the story required, without going overly warm or pastel. It intercut perfectly with the 5248. I also needed an exterior stock that handled extremes of contrast well, since I had no HMIs for daylight fill, only the occasional bounce board or reflector from a distance," he explains.

One shot in particular illustrates the point: "We had this shot on a rooftop, looking up at our two heroes," Schwartz recalls. "They were in dead backlight, and we were shooting into a hot Florida sky. I pulled my black ProMist, used a Pola screen on the lens and bounced a bit of soft fill into their faces. They read T5.6, and the sky behind them read close to T22 on my spot meter. I exposed at T6.3, and every bit of cloud and sky detail held perfectly in the background."

Lens filtration and the subtle addition of color to some lights became an economical way for Schwartz to build mood. "I used a very light net behind the lens for the entire film," he relates. "I varied the density of the Tiffen black ProMists I used up front; they're wonderful for subtly reducing the 'edge,' while maintaining the rich blacks and shadows."

The office interiors, principally lit by softer fluorescent instruments, called for a ⅛ black ProMist. Scenes at the home of the protagonists featured warmer, more direct lighting and a ¼ black ProMist. "I would sometimes add a bit of warmth with ⅛ CTO or ⅛ CT straw to a key light," says Schwartz, "along with Light Grid or 216 diffusion, for a little more humanity; this contrasted nicely with the cold, impersonal corporate world."

Schwartz and the Hillenbrands were determined to


ON
FILM
"My mother was a choreographer, and my father was a conductor. They provided my artistic foundation. I studied film-making and started my career operating a live video camera for TV dramas. Within a year I was shooting films. Movies are like human beings. They have distinct personalities and always go their own way no matter what you have planned. You can analyze a script and plan to shoot in a certain style, but during production you'd better go by your instincts and respect the movie's own personality. We have so much more freedom to express ourselves today. We can take more chances and trust our instincts by doing something new and unexpected. I believe cinema-tography is an art because it's an individual form of expression. It can be as subtle as making a character dominant by putting them closer to the lens and isolating someone else at the edge of the frame. I light for two reasons. The light has to feel authentic. I also light to make the audience feel emotions ingrained in the story. There is always a fine balance. You want to do something spectacular, but cinematography should never be too apparent to the audience. If they notice my work too much, it makes me wonder if I have done my job."
Jost
Vacano
BVK, ASC
Jost Vacano's body of work includes *Das Boot (The Boat)*, which earned an Oscar® nomination, *The Never Ending Story, Soldier of Orange, Robocop, Total Recall, Untamed Heart* and *Showgirls*. His current work in progress is *Starship Troopers*.
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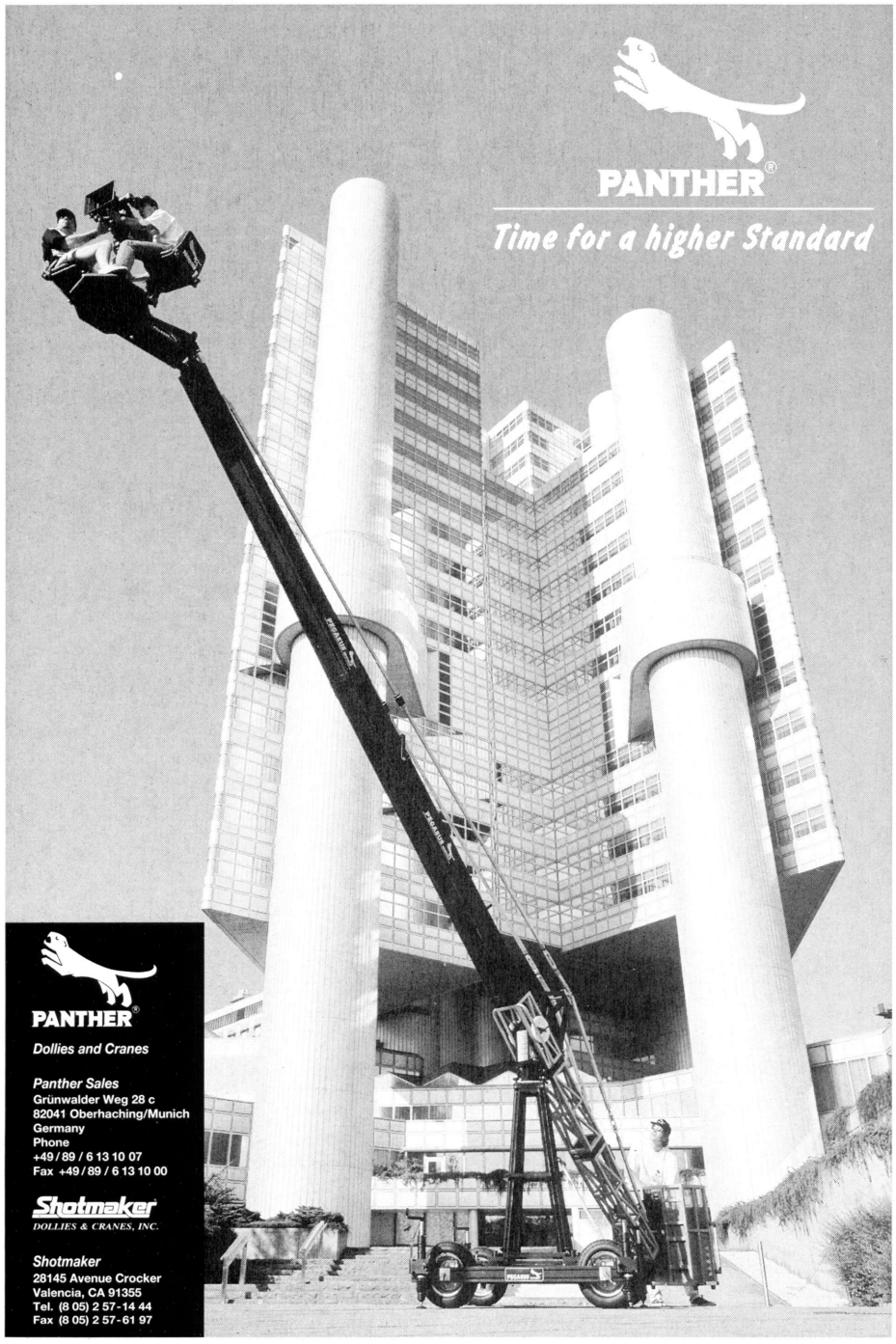

avoid the "static" look that plagues many film productions lacking the money to set up and light "big-time" camera moves. For one scene in a Jacuzzi, the storyboards called for an ambitious shot: a 270-degree circle starting on one actor's face, dollying around the outside of the tub at deck level while panning from actor to actor.

"We put a Weaver Steadman head, which allows you to undersling the camera, on an offset arm from the Fisher 11 dolly — which is a fabulous dolly, by the way. It has a "roundy-round" mode which allows you to dolly in very tight circles. When we shot, the camera was hanging with the matte box about one inch over the level of the deck. The dolly track was plywood painted to look like the rest of the deck. So we actually photographed the dolly track as we went around, but you don't know it. They had to strap me to a piece of wood attached to the dolly so that I could physically stay in the viewfinder of the camera," Schwartz recalls.

The climax of the film allowed Schwartz to "cut loose" a bit, since the protagonists throw off the main circuit breakers in the corporate offices, plunging the place into darkness. An automatic emergency lighting system kicks in, throwing hard shafts of blue-green light from the "backup" sources onto faces and walls. "A very light Rosco fog helped to emphasize the cold shafts, which were produced by a ½ CTB-¼ Plus Green gel combo on our small Fresnel units," says Schwartz. "Many of these fixtures were actually photographed in the scenes to help sell the idea of 'emergency' sources in the ceiling."

Thus was an accumulated knowledge of the craft of cinematography brought to bear on a small theatrical feature shot in south Florida. When money is tight on the film set, ingenuity becomes the filmmaker's most valuable asset. And ingenuity is often simply experience in disguise, combined with a determination to get the job done. After working as an operator for 10 years, and a feature-film director of photography for 19 days, Phil Schwartz has ingenuity to spare.

THANK YOU

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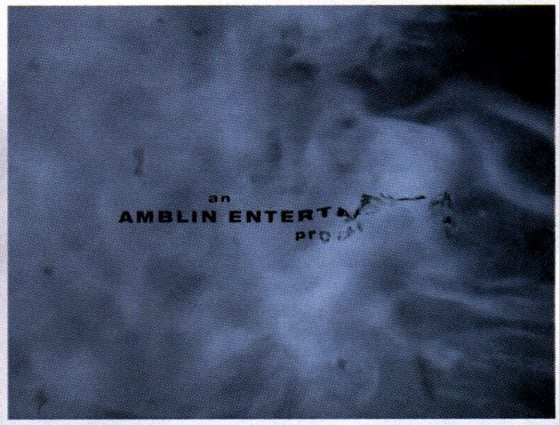

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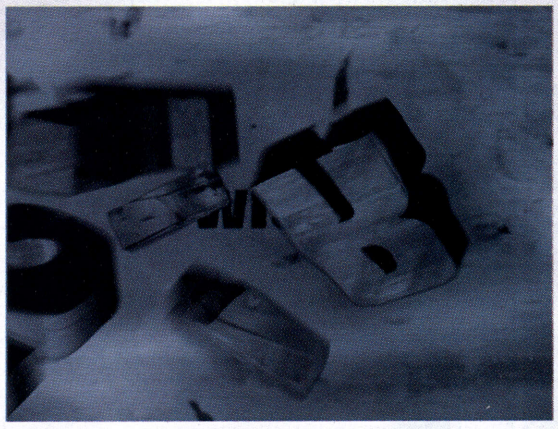

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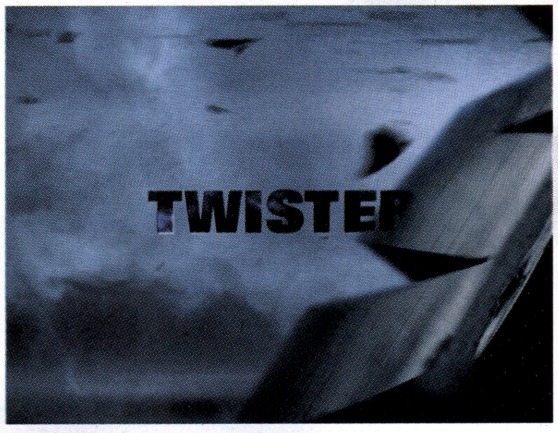


RGA/LA

525 POST PRODUCTION

Worlds at War

A pair of longtime collaborators — director Roland Emmerich and cinematographer Karl Walter Lindenlaub, BVK — join forces once again for the apocalyptic science-fiction epic *Independence Day.*

by David E. Williams

Right: ***Lindenlaub (left) and Emmerich plot their next shot on the White House set commandeered from* The American President. *The cinematographer found the stately setting problematic, but creating the film's multiple environments (including the interior of an alien spacecraft, seen at far right with actor Jeff Goldblum) was a unique assignment he enjoyed.***

DURING THE FILMING OF *INDEPENDENCE DAY*, visitors to the production's home base — the sprawling Hughes Aircraft complex in Culver City — couldn't help but notice the area's security precautions: razorwire, guard towers, and searchlights. Large signs warned "DANGER OF ELECTRIC SHOCK," "DO NOT ENTER" and "HAZARDOUS CONTAMINATION." There's an ironic tingle in the fact that a tale of interstellar paranoia was largely shot in the same place where top-secret weapons were designed and built during the Cold War.

Co-written by German-born director Roland Emmerich and producer Dean Devlin (who collaborated on last year's hit *Stargate* and are currently developing remakes of *Fantastic Voyage* and *Godzilla*), *Independence Day* is a direct descendant of the 1953 screen version of H.G. Wells' classic *War of the Worlds*. However, the story has been restructured as an ensemble-cast disaster picture, such as the 1970s event films *Earthquake*, *The Poseidon Adventure* and *The Towering Inferno*. Explains Devlin, "Roland and I have always been a huge fans of those movies. I loved watching stars like Charlton Heston and Steve McQueen trying to survive and not knowing which one would. But we're also science-fiction fans, and *War of the Worlds* is one of our favorites, with those huge Martian ships blowing up famous landmarks like the Eiffel Tower, the White House and Big Ben. That led to *Independence Day*, which combines those two interests on a global level. So this is the biggest disaster film of all!"

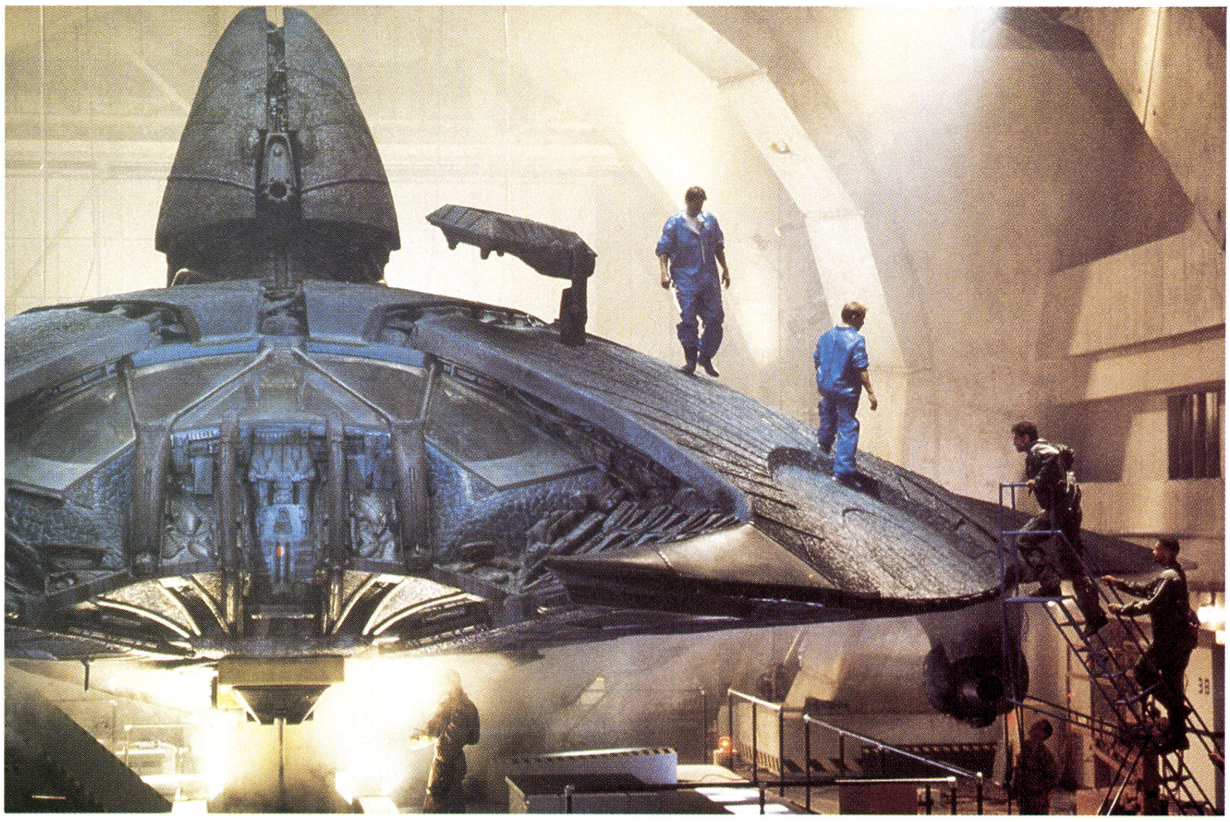
Indeed, the film chronicles the July 3 invasion of Earth by extraterrestrials armed with city-sized spaceships, destructive beam weaponry and a brutal lust for interplanetary domination. And like the disaster films Emmerich and Devlin emulate, this tale is told from disparate viewpoints, including that of a cocky F-18 fighter pilot (Will Smith), a young single mother struggling to save her son (Vivica Fox), the humbled President of the United States (Bill Pullman), and a lone scientist who has cracked the aliens' communications code (Jeff Goldblum).

Photos by Claudette Barius, Melissa Mosely and Myles Aronpwitz, courtesy of 20th Century Fox.

Their story threads come together as humankind battles the galactic fiends during a showdown on the Fourth of July holiday. Yet Devlin quickly adds that *ID4* (as the film is commonly referred to) is not quite as serious about its subject as the films which inspired it. He remarks, "We wanted to have fun and play with the notion of science-fiction in general."

One humorously inventive aspect of the plot is the unique weapon used to battle the invaders: an alien scout ship that crash-landed on Earth decades earlier and has now been successfully reconstructed by the military. The story idea was based on the real-life "Roswell Incident" in 1947, which UFO enthusiasts assert was the crash-landing of a flying saucer, covered up by the U.S. government as a weather-balloon mishap. The ship and its otherworldly occupants were supposedly spirited away to a hanger in "Area 51," a well-guarded Air Force installation in New Mexico.

The first stop on a tour of *Independence Day*'s operations at Hughes reveals a cavernous



The captured alien Attacker is readied for liftoff in the Area 51 hanger. Built at Hughes Aircraft, the huge set incorporated the warehouse site's walls and ceiling. While steam effects were used to add practical atmosphere, shooting in Super 35 cut down on the use of smoke. Says Lindenlaub, "Roland is like Ridley Scott; every set has to be filled with smoke. But after just two days on stage, I talked him out of using it except for effects and model work. The crew was relieved, but it also just didn't work. The grain was too visible."

mockup of the Area 51 hangar containing the repaired spacecraft. There, during the 39th day of shooting, Emmerich, director of photography Karl Walter Lindenlaub, BVK and their crew were filming scenes featuring actor Jeff Goldblum and a group of extras playing soldiers. The huge ship is thoroughly convincing, even though its components are plaster, plywood and polystyrene — not unknown alien alloys.

While *ID4*'s director is an avid sci-fi devotee, Lindenlaub, whose credits with Emmerich include the genre features *Moon 44*, *Universal Soldier* and *Stargate*, soberly admits that he is not. "Only through my relationship with Roland did I ever get involved with this stuff," confesses the cameraman, a youthful native of Hamburg, Germany. "He loves science-fiction and having fun with that world. I'm more serious, I suppose. I like thrillers and dramas and romantic comedies. But I can't imagine Roland doing a romantic comedy — *ever*."

Between his projects with Emmerich, Lindenlaub has photographed the rap comedy *CB4*, the epic period romance *Rob Roy*, the western *Last of the Dogmen* and the drama *Up Close and Personal* (see *AC* April '96). He notes, "*Independence Day* is a fantasy, but it has a lot to do with us at this moment. Here in Los Angeles, we have had riots, fires and earthquakes — and we lived through all of that together. This film reflects what happens to people when everything their life is based on doesn't exist anymore. That's a very realistic aspect of the film, and when you see what these characters encounter, you're in this film with them whether you like it or not. That's my personal entrance into the story, not the science-fiction end."

Boot Camp

Despite their divergent interests, the two filmmakers' careers became intertwined shortly after Lindenlaub abandoned his plan to study journalism and enrolled in the Munich Film and Television School in the late 1970s.

After taking a 16mm production seminar to prepare himself, Lindenlaub entered the school as a documentary filmmaker. But he soon found himself hanging out only in the feature film department. "I liked what they did, and documentaries didn't seem interesting anymore," he explains. "Then we had a very good lighting seminar with Walter Lassally, the English cameraman who shot *Tom Jones* and *Zorba the Greek*. It was an intense, two-week workshop and we did a short movie — shooting in 35mm in black-and-white. I had the opportunity to operate the camera, and that's what really inspired me to concentrate on cinematography. From then on, I shot all kinds of student films, including some for Roland, who was in my year and was already totally into production design and big special effects — science-fiction stuff."

After graduating at the age of 23, Lindenlaub sought to continue his education. "My foundation for camerawork was much too thin, as we were all initially studying to become directors," he says. But the opportunity then arose for him to attend the National Film and Television School in England. He received a grant from the German government, and studied there for one year as an exchange student.

"They had a whole department for camera," Lindenlaub relates, "and very intense lighting

seminars taught by established directors of photography, including Billy Williams [BSC] and Oswald Morris [BSC]. I learned about traditional lighting, things I still use all the time — like how to use fill light, which I feel is more difficult to set than key. From that foundation, I developed my own style. I also met Michael Caton-Jones there, for whom I later shot *Rob Roy*."

Lindenlaub returned to Germany and quickly became involved with productions there. His experience with Emmerich on 1990's *Moon 44* laid the groundwork for their subsequent collaborations, as the cameraman became heavily involved in the effects-laden production. "Doing special effects didn't seem to be anything I would ever be interested in or capable of dealing with," he says "But I learned that shooting models isn't really that difficult. With in-camera effects, you can see your setup through the viewfinder and check if it feels real."

His efforts on *Moon 44* earned Lindenlaub a German Film Award for Best Cinematography at the age of 33. The film, which was a modest success in the United States, prompted the next stage of his career. Hollywood producers were impressed with what Emmerich had achieved on the low-budget picture, and he was offered the action film *Universal Soldier*. He, in turn, brought in Lindenlaub. Says the cinematographer, "The movie made money and everything started rolling, so I had to decide whether I would go with it or go back to Germany. I wasn't sure I could compete with all of the great cameramen in America, and everyone [else] who comes here to try to do big pictures."

He took the chance.

"In Hollywood, I've encountered an entirely different standard of technical abilities with the crews and equipment," Lindenlaub observes. "Whether it's a key grip, dolly grip or focus-puller, they know the equipment down to the last screw. So I'm grateful to a lot of the guys who have helped me meet the standards here. And the wonderful thing about America is that it's a country of immigrants. Nowhere else in the world do foreigners get treated so well; having an accent isn't a huge handicap. So I'm very grateful to be here.

"I'm also fortunate to have worked with a few individual directors who got their breaks and took me with them, which is the big advantage of coming from a film school background. I chose that path because I thought it was my only way to get into the film industry. I also think it offers the advantage that you start lighting earlier, as opposed to working as an assistant or operator.

"In terms of cinematography and lighting, Roland and I have developed an unspoken agreement about what works and what doesn't when we set up a shot or talk about colors, costumes or anything else. In terms of content, even though I'm not as interested in the science-fiction aspect, we work well together in finding the important points, blocking the action and shooting it. He reserves the right to be irrational, wanting to shoot everything, and then I try to pull things back a bit and make sure we can actually do it and make it seem plausible."

Below: ***The President (Bill Pullman, seated at left) braces for bad news in the war room. "What really interests me about lighting and photography is the exploration of color — to go a lot further with such elements within a real world," says Lindenlaub, who cites Vittorio Storaro, ASC's work in*** **One From The Heart** ***as a classic example. On this set, the German cameraman offset primary-color backgrounds with warm tungsten overhead lighting to add contrast and depth.***

The Battle Begins

Independence Day put Lindenlaub's experience and his relationship with Emmerich to the test. The production began immediately after a whirlwind development period in the wake of *Stargate*'s international success. Reasons the cinematographer, "This film is certainly the essence of everything Roland has done before, but it's much bigger. In this case, it was very difficult for me to be on top of everything because I didn't have any prep time. On the other films we've done, it was possible to meet the technical challenges because I had generous prep time, sometimes as much as three months. For instance, on *Stargate*, I was able to go out to the desert many times to study the light, do extensive filter tests and prepare myself for a big picture with 1,400 extras and four cameras in a hostile environment.

"On *Independence Day*, I had just come off of *Up Close and Personal* and had only one week before shooting commenced in New York City, then continued in the Utah desert and at Hughes Aircraft, where we had our sets.

"What I had going for me was my crew, most of whom I have worked with for the last five years. And since I knew what Roland likes, everything fell into place without us having to go through a lot of groundwork discussions.

"We first scouted Manhat-

tan, where we were going to have several hundred extras running around in the streets. We figured out camera positions and the times of day to shoot so we wouldn't get totally victimized by the sunlight conditions. We found a crew in New York and then went to Utah to look at the locations there.

"Location scouting is one of the most difficult things to do in preproduction. Usually you have time to go with the director, choose from a selection, and go back with the director — only then can you go with the production crew. You may not know exactly what you're going to do there on the production day, but you still have 30 people who want answers to their questions. Where are you going to put the lights? Where does the generator go? What direction are you going to shoot in first? So on my first scout, I already had be able to answer all the technical questions.

"I had to rely on Roland a lot more than I normally would. Fortunately, he knows a lot about lighting, lenses and photography. Otherwise I would have never done this movie. It would have been incredibly irresponsible."

On location in the "ruins" of Los Angeles. The* ID4 *production greatly expanded the scope of their interstellar war by redressing and utilizing the disaster-prone city's scars from the 1994 Northridge earthquake and various demolition sites.

Weapons and Tactics

Camera selection was never a question for Lindenlaub, specifically because of the lenses he could use. He explains, "Our first unit used Panavision because I have a great relationship with them and I am a fan of their Primo lenses, which I only recently discovered.

"Back in Germany, where we of course used Arriflex, my preferred choice was Cooke lenses. I always loved the way they behaved and showed color. You certainly didn't need any diffusion. But they are not coated well enough by modern standards, so they're tricky with extreme highlights. But people photograph wonderfully with them and they are more forgiving with depth of field in the way the focus falls off. Zeiss lenses, however, always seemed too sharp, cold and hard for me.

"When I came to the United States, we started using Panavision because we were shooting all of these anamorphic films. Then I did some spherical work and I stayed with Panavision and used the Primos for the first time. They can look into hot, overexposed areas and still find texture. At the same time, the dark parts almost glow, which I think looks very three-dimensional. I couldn't give you a technical explanation for that, but I just see them that way. They're also made with the same glass as Leica lenses, so now I'm doing all my still photography with Leica.

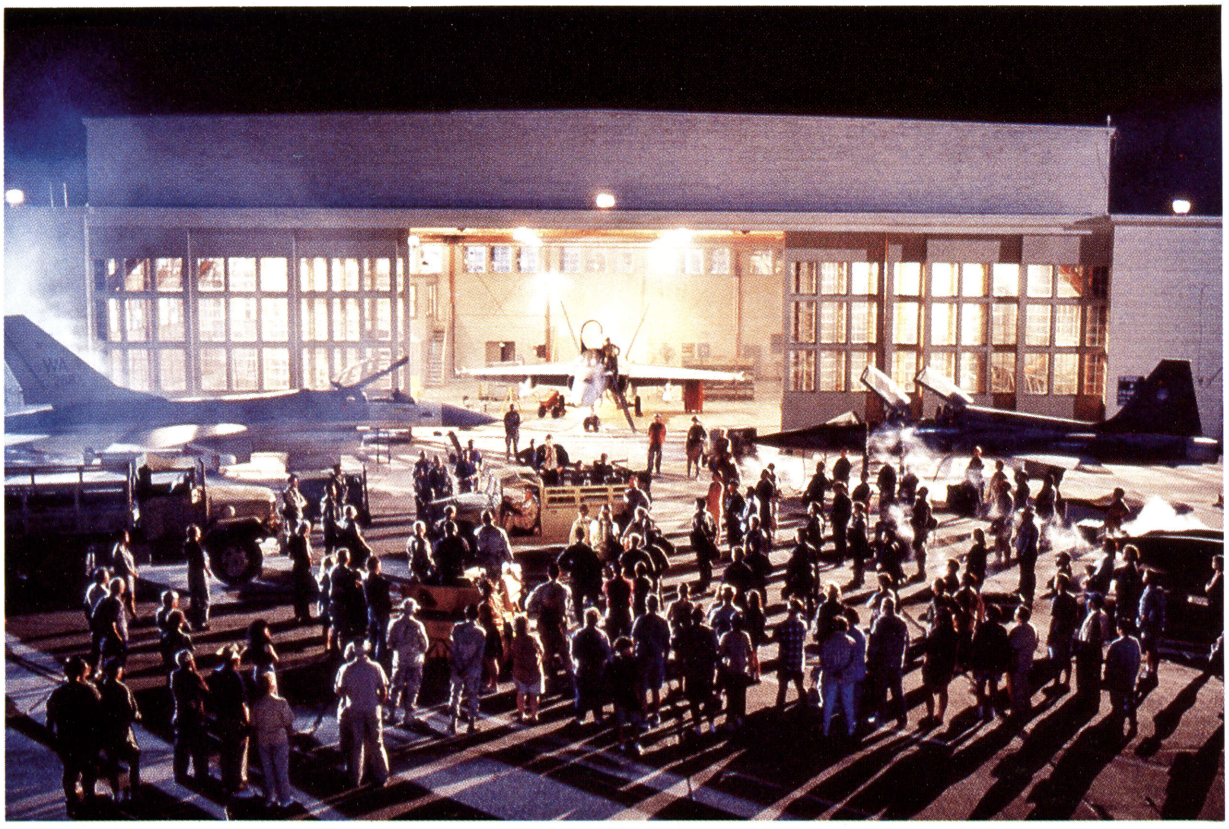
"We also used a lot of Arriflex and Fries [cameras] for the model units, plus a lot of high-speed cameras from Photo-Sonics."

Lindenlaub has always used Kodak film stocks, even while in Germany when Agfa was available. "I'm overwhelmed by what Kodak does every year, coming out with new stocks all the time," he says. "They certainly give me all the possibilities I need to express myself, but it also takes a long time to get used to a new stock, to the point where you don't have to use a meter anymore. The 5298 was easy, but the 93 took a lot more experience, and *Independence Day* was one of the films where I got that experience."

The cinematographer relied heavily on the 200 ASA tungsten-balanced stock, as the picture's volume of digital and miniature effects compelled him to utilize Super 35 to achieve the 2.35:1 frame both he and Emmerich wanted. Says Lindenlaub, "I had shot in Super 35 many years earlier on a film Roland produced called *Eye of the Storm*, and I didn't like it very much. The problem isn't in the night scenes, because the blacks work pretty well, but the grain shows in the mid-tones."

Asked for the specifics on the format decision, Lindenlaub outlines, "At one point, we had seven units shooting on *Independence Day*. While we could have outfitted them with anamorphic lenses, since Panavision really went out of their way for us, it would have been difficult to get enough lenses of matching quality.

"Also, anamorphic has inherent restrictions in terms of depth of field and lighting. That can make things very difficult when you're working so extensively with miniatures. Anamorphic can be tough when you're shooting at 300 frames per second to make the scale work. You need light levels that you can hardly achieve. It's much easier to use a lens that's only half as long: a 16mm spherical lens instead of a 35mm anamorphic lens. So it was essential for the model units to



Poised in the bed of a truck, the President rallies his remaining troops. The scene was staged at an actual airbase, which Lindenlaub bathed in contrasting colors — warmth in the hangars and a cool moonlight blue outside — and lit in conflicting directions to emphasize the drama of the situation.

shoot in Super 35, and it was better for image consistency if we did the same on the first unit. Of course, the Primo lenses helped in this situation, since they are so sharp."

To soften the Primos, the cameramen sometimes relies on a custom net when photographing women, or an occasional Tiffen ProMist or Soft/FX filter.

"I personally prefer anamorphic, although it's not the answer to all of our needs," he submits. "I just wish there could be an agreement so we could have only one widescreen standard — one that uses the full film negative without all of these problems, so a film could have almost the same ratio onscreen as it does later on video.

"In Super 35, you throw almost half the negative away and it shows on the screen. And since you're a generation down it shows even more. I'm not looking forward to seeing *Independence Day* blown up to Cinemascope and projected on the big screen, where I'll see all the differences in contrast and color."

Lindenlaub's solution was to "shoot with the finest stock possible. I always went with the one I knew I could just barely manage to light; I didn't simply use the high-speed stuff just because it's easier." Disappointed by the grain he saw in the 5298 during dailies, he "took advantage of being able to shoot at an f2.8 with spherical lenses instead of an f4 in anamorphic. So I used 5293 whenever possible. I'd almost rather underexpose the 93 than go to the 98."

Victory Colors

Asked about his approach to lighting, Lindenlaub offers, "I don't think every light has to be motivated by a source — although that's a good starting point — but I want to be able to look at a scene and *believe* it in terms of contrast, texture and everything. And whether you do a science-fiction film or an Ingmar Bergman drama, you have to meet that criteria.

"You have more creative license on a science-fiction film, but when you take an audience to another planet and say, 'Okay, this is what it looks like,' it has to make sense. You have to be *consistent* with reality. It's my experience that when someone tries to push the envelope too far, and the audience can't find something that somehow resembles their reality, they stop trying to accept it. If you suddenly tell people that the sun is light blue and the moon is bright yellow, they aren't going to buy it.

That said, however, Lindenlaub enthuses, "We did experiment with color throughout *ID4*. The film begins very realistically, with each of the characters within their different social environments. The President of the United States is in the White House with his assistant. Meanwhile, the exotic-dancer girlfriend of the fighter pilot is in a strip joint. We have separate worlds and separate lighting for 12 different characters. That spectrum was the fun part; it allowed me to give the film a bit of a backbone in terms of believability. The story draws the characters into a single, very strange situation after the world is threatened by the outside, and this scenario has its own lighting. Later, there is a sequence that takes place on the alien spacecraft, where everything is a monochromatic blue-green."

Creating an alien environment is a matter of interpretation, of course. When asked how he determined that look, Lindenlaub laughs, saying, "Somebody on the

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set asked me what color this light-beam gizmo that comes out of the ship was supposed to be. I didn't want to make it white, and I was already using all the yellows and ambers. The blues were for night. I didn't want red, because that would be horrible. So what was left? Martians are green, right?! But it works, and the blue-green became the color for the aliens, their technology and their presence.

> "We had over a million dollars' worth of lighting rental on this film, which is mind-boggling."
>
> —Karl Walter Lindenlaub, BVK

"Reality is necessary, but it's only a start," he continues. "For example, while waiting for magic hour on location at a huge satellite relay installation near Albuquerque, I asked the people there if I could see their command center. We went there and, of course, it was totally *boring*. You could never put a camera in there! I've lit dozens of places like that in movies, but you always try to give them something special, like low-angle light sources, reflections coming off of monitors and maybe a blue light coming from somewhere. I can only imagine what people who work in places like that must think of what they see on television and in films. They must just laugh."

As far as his tools are concerned, Lindenlaub "is a big fan of tungsten lights, Fresnels. I can do anything with them: dim, bounce, diffuse, hard-light. They have a continuous spectrum and don't flicker. I'm not a fan of HMIs, but they're a necessity because they're so damn practical. And as far as fluorescent lights are concerned, I know there are people who think they can do anything with them, but they're only good for fluorescent environments: hospitals, supermarkets, computer rooms, that sort of thing. The audience is used to seeing that kind of light in those places. Fluorescents just have a different texture and a different feeling. And the fall-off they have is terrible, so you can't use the distance ratios that apply to all other lights. They're like using practicals. "You have to use light itself as you have to use color — in a way that the audience can connect with in their experience. Otherwise it feels fake."

Combining Forces

"Possibly the most irritating aspect of making *Independence Day* was that there were so many units shooting footage for the film," admits Lindenlaub. "It was impossible to be in all those places at the same time, so I tried to stay in touch with all of the different cameramen: motion control, second unit, the two model units, the aerial unit, and others. Jonathan Taylor and Ueli Steiger did a terrific job shooting some complete scenes to match first-unit footage. The workload was just so big that no one cinematographer could have shot it all without 150 days in the schedule. We had about 74. I had to delegate a lot more of work than I would have liked."

In addition, Lindenlaub and his wife had a baby at the end of the production schedule, requiring Steiger to shoot the better half of one lab sequence in which a supposed-dead alien revives.

To deal with the situation, Lindenlaub set certain standards by explaining his aesthetics and creating rules for color in detail. Citing the difficulty of dictating specific lighting rules and techniques to his team, the cinematographer relied instead on the tried-and-true technique of "finding not only the best people for the job who share your taste, but then communicating with them. Lunchtime and dailies of course were the best opportunity — at least we had something to talk about." He also found himself "touring" the Hughes facility stages, visiting each unit, giving direction and then moving on in an almost assembly-line fashion. "It was difficult; I wouldn't want to do this all the time, that's for sure."

Lindenlaub also depended upon his regular camera crew to go above and beyond the call of duty, especially A-camera operator Peter Krause, first AC Gary Scott, second AC Gary Camp and key grip Loren Corl. He says, "My gaffer, Neil Holcomb, who had worked for me as a best boy for years, did a lot of preparation for the lighting of the movie, which was essential so we could start on time. My rigging gaffer, Martin Bosworth, and rigging key grip, 'G' Dhiensuwana, also did an amazing job. Because they understood the size of the sets we were on and what I wanted, they could make their own equipment lists. All I could do was give them a general design, but there were hundreds of little things that would go into that idea. We had over a million dollars' worth of lighting rental on this film, which is mind-boggling."

With a laugh, Lindenlaub concludes, "I had to have people I could depend on, otherwise we were screwed."

Special Ops

While *ID4*'s effects units executed the bulk of the production's model photography (see separate story on page 43), Lindenlaub found himself dealing with miniatures as well. He explains, "Creating effects practically is something Roland believes in strongly; I like to do it because then I can control the situation."

In one scene, Air Force One lands at a remote desert airbase after the alien assault. With the first unit was already shooting the tarmac and hangers with the principal actors in Utah, the filmmakers decided to execute the foreground miniature shot of the 747 jet rolling to a stop. "It was very simple to do," Lindenlaub says, "and only took 20 minutes or so with a small rostrum painted like the landing strip, and the jet model and the camera lined up correctly with the background. Why not get the shot instead of sending out another crew?"

The cinematographer prefers such simple approaches over more elaborate ones. "The problems with CGI are that it's very expensive and it takes forever," he cites. "So we tried to get around it whenever possible.

"For example, there are dogfights between the alien attacker ships and F-18s. Well, we needed a certain amount of cockpit coverage for the editing process, with actors just pretending to fly around. It's like doing factory work. At the beginning we were going to do it all with bluescreen,

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but we discussed it and found that simple photo-backings could be used instead. It's no different than putting a rotating drum outside a stagecoach or train window, like they used to do in the old days. But it works and it's simple. And you can always do things in a more complicated, expensive manner if it doesn't look right.

"Shooting bluescreen and greenscreen is easier now. You don't need a consultant, and you can do it yourself anywhere in the world. You just have to balance the background to the foreground and separate the colors. But if you can, why not just use a photo-backing? Flying at high speed, what do you see outside a cockpit window? Usually just motion blur. So do you have to do that as a $20,000 bluescreen shot? No."

> "It doesn't matter how big the set is. . . It's just a matter of key light, fill and backlight and finding a way to apply those."
>
> —Karl Walter Lindenlaub, BVK

Theaters of War

Pondering the experience of shooting at the Hughes Aircraft facility, Lindenlaub notes, "Hollywood perfected the art of shooting things on stage, and then people started going out on location because they hated the artificial style they got from being on stages. They wanted Realism.

"Nowadays there is the tendency to use warehouse spaces for budgetary reasons. Often you are on location and there *are* no stages, so you create one the best you can. But when you are in a city like Los Angeles, which has plenty to choose from, you have to balance the advantages versus the disadvantages.

"Doing this film at Hughes was necessary because some of the sets were just too big to be built on a stage. The model and motion-control units had their own huge stages, and we had several warehouses that held all of our sets. But ultimately it was a budgetary consideration."

Part of the agreement the production made with Hughes was that no permanent construction could be built, and no damage could be done to existing structures. Says Lindenlaub, "We couldn't put one nail in a wall, so all the lighting had to be hung from certain dedicated points by strings and cables."

The cameraman reports that one answer to this problem was to incorporate lighting within the set design. Says Lindenlaub, "On science-fiction films, you can't go to a rental or prop house, get some lamps and just stick them in there. They have to look right. You can't just *find* lights for the interior of an alien ship or the Area 51 laboratory. You usually have to make them. So it's great to have a production designer like Oliver Scholl and Patrick Totopoulos sit down with you and plan what you'll need."

The tunnel-like labratory leading to the hangar holding the alien ship was "at least 600 feet long, and we never could have rigged it in a conventional studio fashion because of both money and the weight restrictions. So we had to come up with a lightweight lighting scheme. We bought household fluorescent housings and outfitted them with color-corrected tubes. These were built into the set's ceiling— wired into different circuts so they could be flickered on cue. The side walls were outfitted with opaque Plexiglass panels and backlit with hundreds of small, open-faced tungsten units.

"Everything was run through dimmer boards. So at the end we had a very clean, high-tech look for this set, which could be easily altered to represent different moods as the story became more dramatic."

An even bigger lighting setup was used in the cavernous Area 51 hanger itself. "The walls of the warehouse almost became the walls of the set," the cinematographer observes. "This was my greatest fear, because it meant that I couldn't bring in many big units to light with from outside the set. A lot of stuff was rigged into the set design, which took time. The idea was to light the alien craft, which was propped up on a large pedestal platform, almost like you would do with a car for a commercial.

"It had a huge body, so we built a 40' by 40' soft-box over it. There were about 40 2K nook lights inside bouncing against a Griffolyn and then coming back down. The soft-box was teased off on all four sides with black Duvateen that could be raised and lowered to control the spill. To that base we added three 20Ks behind the ship and then Dinos on the sides to create a cross backlight. We also had our own lighting platforms made of pipes and hung from from the ceiling with chain motors. On those we had 10Ks and Par lights. We liked them so much that we just left them in the shot. They gave me the flexibility to light side angles and to light the ramp that led down to the ship.

"On top of that we had eight Cyberlights, which my gaffer had found. Those had their own computer controls and operator. They were positioned at strategic points above to create focused beams—just to add another element. I liked their flexibility. I always look for something other than traditional movies lights, especially if you have to have them in the shot. If you can afford to have a few of those, they're great. At the push of a button you can create all kinds of patterns and colors, but we only used the movement since no one would believe that the government would light a secret underground hangar like a disco!"

Built into the pedestal under the ship were housings filled "with Deca lights, those banks of little Par lights, like the ones used on *Crimson Tide*.

"The trick was to design the lighting so that we could move around quickly and shoot in different directions. We could turn one side off and turn the other on, tweak it and shoot. Running everything through our dimmer board was essential for this."

Also shot at Hughes were interiors of the White House, a mjor location in the early part of *ID4* — at least until it's obliterated by the aliens. The set itself was recycled from Oliver Stone's production of *Nixon* [*AC* March 1996,] which in turn had scavenged it from *The American President* [*AC*

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November 1995]. Like Robert Richardson, ASC and John Seale, ACS before him, Lindenlaub would find shooting the White House to be a bit problematic. He recalls, "I was doing lots of huge night exteriors and crowd scenes on this movie, and I was really looking forward to shooting there — just a normal set with windows and sunlight. But the White House turned out to be one of the trickiest sets on the whole movie.

"Taking the White House set away from Sony Studios and putting it in the Hughes facility made it terribly difficult to light. The set was designed with the stage environment in mind. We couldn't rig at Hughes like we could at Sony."

The long main hallway connecting the First Family residence with the rest of the rooms was to be used heavily for tracking and Steadicam shots, but the candelabra and chandelier practicals made it difficult to avoid shadows. "We took a long time to figure this out," says Lindenlaub, "but my gaffer talked me into using Chimeras on 5Ks instead of building our own soft-boxes.

"For the Oval Office itself, I planned to hang a big soft-box straight down from above to have a base. Gordon Willis [ASC] started this, and now it's a standard thing to do. The disadvantage is that it's difficult to get the light in the actors' eyes. We also decided that the shears would be closed. Seeing this nice garden outside wouldn't have been right; after all, it's supposed to be a crisis situation!

"Well, I walked in there two days before shooting and I knew that the soft-box had to come down. I could get a quick exposure with that lighting, but there was no way to really control it. The faces just didn't look good. The space demanded that the lighting be classic and dramatic. Bill Pullman, playing the President, had to look charismatic in a classic Hollywood sense. So we went more directional and used 20Ks coming through the windows and then extended that with big bounce cards above the walls. I would then add fill from the side. That approach looked much more realistic to me, and more photogenic for the actors.

"Another difficulty was the round walls. We're used to working with angular walls and corners, so when you have to flag off curves, it becomes incredibly difficult."

Shooting on the highly reflective Bonneville salt flats of Utah was a different matter altogether. "That must be what it's like to shoot in the Antarctic," Lindenlaub speculates. "Not only does the salt get into everything, but the situation makes people very aggressive. After five or six hours you just wanted to grab somebody by the throat, but the light and colors were so extreme and beautiful.

"The scene we were shooting there begins with Will Smith's character, a fighter pilot who has been shot down. You see this lone figure against the white background, dragging a bright orange parachute containing the body of an alien he has knocked out. It's the first alien we see in the film. Then, like a scene out of *Lawrence of Arabia*, this fleet of motorhomes, holding refugees from the cities, appears on the horizon.

"Shooting that sequence was similar to our experience in the desert on *Stargate*, but the color of the sand in Arizona was more pleasant to the eye than the pure white of the flats. I found that while doing close-ups, we had to put Duvateen on the ground to cut down the reflections. It was the most hostile environment I've ever shot in."

Victory

Concludes Lindenlaub, "I would approach a production like this very differently next time. I wouldn't do it without enough prep time, that's for sure. But the most important lesson was, 'Don't be afraid of size.' It doesn't matter how big a crew or the set is. I'm sure all directors of photography have the same bad dream about going to dailies the next day and discovering that there's nothing exposed on the film. That fear is amplified by the size of the production. But the principles of shooting and lighting are the same as they are on a smaller film. It's just a matter of key light, fill and backlight and finding a way to apply those." ☙

The End of the World As We Know It

Traditional models and miniatures are mixed with digital wizardry to tell *Independence Day*'s tale of alien aggression.

by Ron Magid

DIRECTOR/CO-WRITER ROLAND Emmerich and producer/co-writer Dean Devlin's sci-fi extravaganza *Independence Day* is arguably one of the most ambitious effects pictures since *Return of the Jedi*, but the filmmakers had just over a year to pull it off. From the moment 20th Century Fox acquired the project, the studio's marketing machine went into overdrive, announcing that the film would arrive in theaters for the July 4, 1996 weekend.

With just three months of preproduction to plan hundreds of effects shots depicting such sights as an alien Mothership the size of Texas, city-sized Destroyers, fleets of Attackers, and mammoth fireballs that engulf Earth's major cities and monuments, the *ID4* filmmakers sought to assemble an in-house effects unit. In short order, they brought in miniature supervisor Mike Joyce (*Batman Forever*), visual effects supervisors Volker Engel (who worked on Emmerich's *Moon 44* and *Universal Soldier*) and Doug Smith (*True Lies*' effects cinematographer), digital effects supervisor/producer Tricia Ashford (*Braveheart*), and a crew of 125 that ballooned up to 300 during post-production. Emmerich and Devlin then dropped a bombshell: despite a written-in-stone release date, they were determined to make *ID4* look bigger than its already sizable budget would allow.

Attack Plans

Believing centralization would breed efficiency, Emmerich wanted *ID4*'s model shop, high-speed and motion-control miniature stages, editorial and production offices all based at the abandoned Hughes Airport complex in Culver City, California. With the film's many sets under construction in several hangars there, and other exterior locations planned around the facility, Emmerich felt confident he could retain daily contact with every aspect of production throughout the tight shooting schedule.

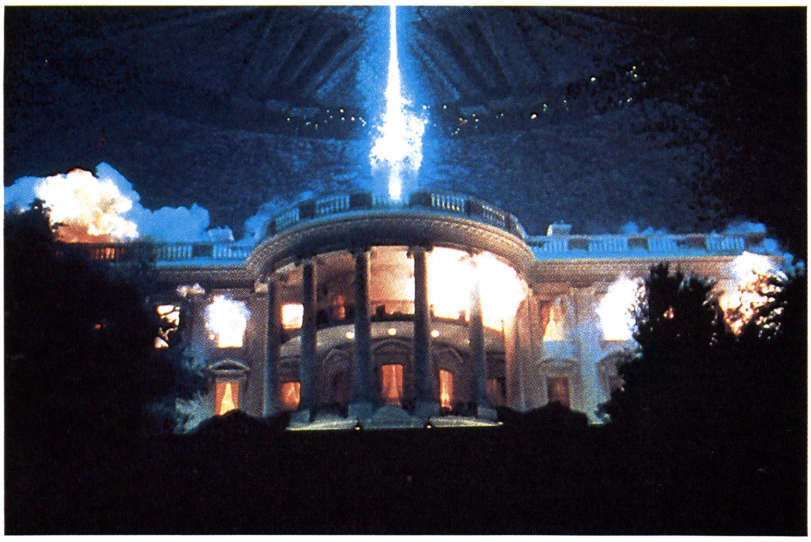
But before hordes of hostile alien spacecraft or defending F-18 jet fighters could go before the cameras, everything had to be previsualized by Patrick Tatopoulos and Oliver Scholl. Both had worked as conceptual illustrators on Emmerich and Devlin's previous blockbuster, *Stargate*, but for this project the director bumped them up to full-fledged production designers. Scholl, a friend of Emmerich's from his native Germany, was the production designer on *Moon 44* and had once been a high-tech industrial designer. Both quickly developed workable concepts for destroyed cities, top-secret underground hangars and countless other terrestrial settings. Tatopoulos began as a comic book artist and illustrator in Europe; in America, he has worked as a conceptual illustrator a variety of films, including *Bram Stoker's Dracula*, *Demolition Man* and the upcoming *Dark City*. "I came from a more organic world than Oliver," Tatopoulos says. "I guess that's why Roland brought both of us in. And since nothing was ever finalized until both of us had our say, we were both involved in [the creation of] every set."

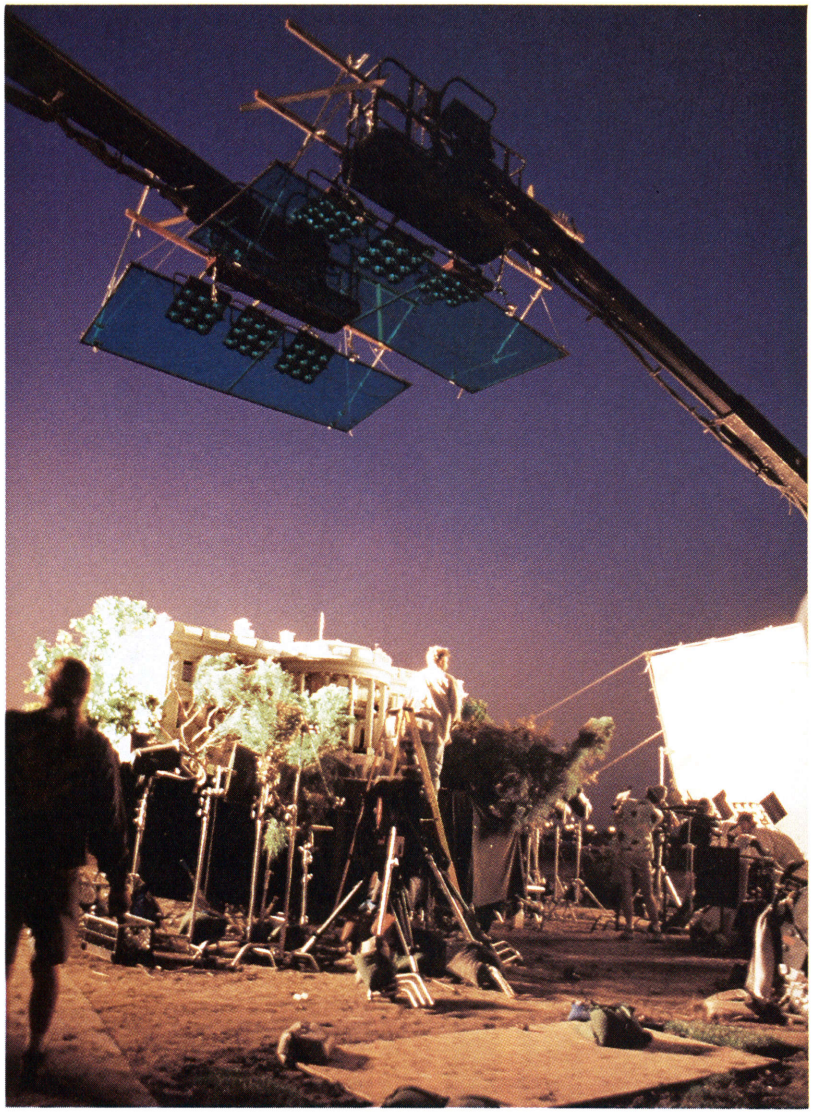
Composites courtesy of Pacific Ocean Post and 20th Century Fox.

An alien Destroyer emerges over New York. Says co-production designer Patrick Tatopoulos, "Roland [Emmerich] felt that simple shapes look the most massive, and [that] the less detail we saw, the bigger audiences would believe the ships were." Doug Smith reflects, "There were a lot of shots with giant ships that had to believably fall away in the haze, so [Volker Engel and Anna Foerster] shot the models as multiple elements; in a clear environment and then heavily clouded with smoke." The ID4 digital unit later blended them to create the drop-off effect and, in this case, added a CG atmospheric "phenomenon." Final compositing was done at Pacific Ocean Post.

Emmerich wanted *ID4*'s alien spacecraft "to reflect popular images of UFOs, like flying saucers," says Tatopoulos. "Then we added some twists, like making the Destroyers so big that they blocked out the sky. After Roland, Oliver and I discussed our designs, we agreed that they looked too detailed from a distance, and therefore not big enough, so Oliver and I both worked out the proper level of detail for each ship."

At the end of March, 1995, Volker Engel and Doug Smith were officially tossed into the fray with





Right: ***The White House detonates. Says effects co-supervisor Volker Engel, "The White House model measured 18' wide by 5' high, and wasn't just built to be blown up; it had to be a really beautiful model so it could first work in several forced-perspective shots. But when the time came, we didn't want to create just one big bang. Joe Viskocil choreographed the entire explosion: first the windows would blow out, then an initial blast would destroy the building, ending with a huge fireball coming out from behind. Joe carefully programmed the timings of the charges, then just hit one switch and everything went off in sequence." It's a good thing they got it right on the first take; it would've taken a week to rebuild the doomed structure (right). Green-gelled 9-lights provide illumination and practical evidence of the alien presence above. Effects cinematographer Anna Foerster utilized multiple high-speed cameras to capture the blast.***

only eight weeks of preproduction remaining before shooting started in June. Says Engel, "Roland and I discussed what we did on [*Moon 44,*] and he asked, 'How much can we do with models on wires?' Those were the first tests we did."

Smith, who'd had experience as a motion-control cinematographer on Douglas Trumbull's Luxor project and on *True Lies,* soon advised Emmerich that both motion-control and high-speed miniatures were essential to the success of *ID4*'s effects. "Most people think motion-control is dying out, but there's a lot of it going on right now!" Smith laughs. "Most of the Destroyer shots were planned as in-camera effects, with the model, the landscape and a backing together. But when we started shooting, we realized that the camera had to be under 12 frames per second to get the f-stop we needed. At that frame rate, we could no longer move the camera smoothly by hand. Motion control was the only way to go."

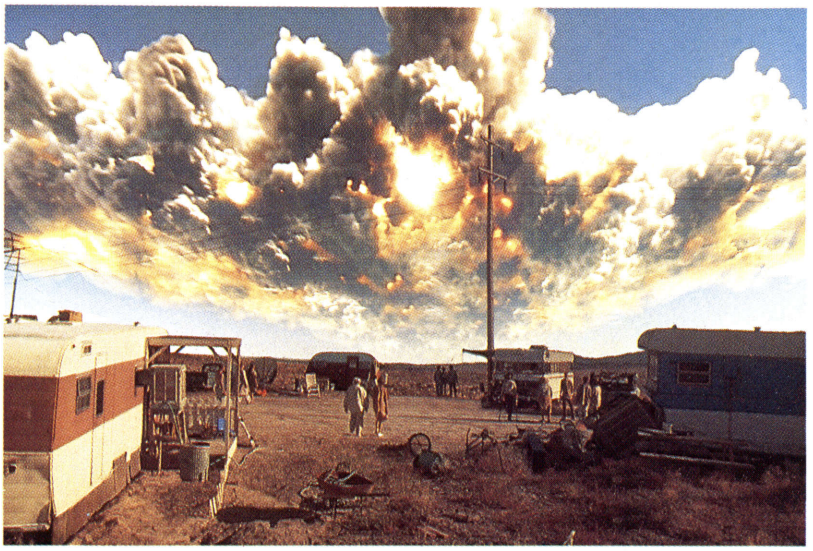
The visual effects supervisors split their duties to maximize shooting time. Smith's shots included dogfighting F-18 fighters and Attackers, the Mothership's interior and exterior, and a variety of other terrestrial and alien craft. Though Engel's crew shot all the motion-control work on the Destroyers, they primarily handled the high-speed, in-camera effects shots — destroying miniature cities, and flying, crashing and blowing many jet fighters and a few alien ships to bits.

It's appropriate that artists filming the mass destruction of Earth should be hunkered down inside an old aircraft hangar. Within the Quonset-hut style Hangar 45 at Hughes, they worked with four crews over seven months to complete almost 400 miniature effects by their deadline. "We always had four teams working — two teams on my side and two on Doug's," Engel says. "So we might have three, even four setups going at the same time."

In addition to co-supervising *ID4*'s miniature effects, Smith was also "in the cameraman position," he says. "Thankfully, I had a really strong gaffer, Richard Sands, who helped quite a bit with lighting. After I checked the first few shots, I knew he and the motion-control operator were going in the right direction, so it was pretty much on automatic. At least it was for me — they had to do the work!"

Smith and Engel shot their miniatures using four-perf Super

35, not the eight-perf VistaVision typically utilized in effects work. Engel and his effects cinematographers, Anna Foerster and Phillipp Timme, quickly learned the nuances of the format. Smith reports, "We only shot 5298 when we absolutely had to, like on high-speed shots, because of the grain problems, although the compositing technology we used was able to minimize most of it. For motion control, we used 93 because of its better grain; for the best overall quality, we shot with 48."



A Destroyer enters earth's atmosphere over the Southwest. Ashford and Turner's* ID4 *digital effects unit created the phenomenon animation. While director Emmerich and producer Devlin were initially skeptical of relying on CG and sought out more traditional techniques, they were soon convinced of its abilities.

CGI Invasion

As principal photography commenced, Emmerich and Devlin brought in digital visual effects supervisor/producer Tricia Ashford to create a temporary in-house digital compositing facility. "They said, 'Here, quick, we need somebody who understands digital,'" laughs Ashford, who previously built R/Greenberg and Associates' Los Angeles effects house. But she was dubious about attempting to set up a compositing facility on the fly. "I said, 'Great idea, but compositing takes so much setup, and we need shots scanned and composited *now*."

So Ashford built the *ID4* computer graphics unit at Pacific Ocean Post, where she had already assigned most of the compositing work to be done. Her concern was that POP's biggest project at that time, *Broken Arrow*, had required only 40 to 50 shots; *ID4* would eventually require almost 400. Since the bulk of digital compositing work was being done at POP, Ashford figured that her new CG department wouldn't need to move *ID4*'s data from one house to another if they worked on POP's network. Ashford struck a unique deal with the company to let her base her team there: "I proposed to create the infrastructure and leave it behind; POP could buy the equipment, then lease it to me. So it was *Independence Day*'s CG, POP's equipment, and my crew."

Continues Ashford, "I brought in my own core team consisting of producer Steven Puri, CG co-producer Tara Turner, CG supervisor Joseph Francis, color timer Greg Kimble, and production manager Craig Mumma, and we set up the infrastructure. POP's Pablo Helman, our compositing supervisor, helped a lot. Figuring out how to track every element needed for every shot was a monumental job, because we couldn't begin working on a shot until all those elements were completed."

But the number of effects shots continued to mushroom daily, and ultimately, Ashford divided her attention to oversee the CGI and compositing work at several houses: the lion's share of the 350 composites went to POP (200 to be done either on Kodak's Cineon system or with Discreet Logic Inferno/Flame software and Silicon Graphics Onyx and Indigo computers), while about 40 shots each were handled by Digiscope (Quantel Domino), The Post Group (Cineon), and OCS (Cineon). VisionArt also contributed 50-plus shots, animated in their proprietary Sparky software and Prisms, which Ashford recognized as necessary tools for several sequences.

Color timer Greg Kimble calibrated each house for image-quality continuity.

Even though *ID4*'s effects demanded it, Emmerich and Devlin were a bit gunshy about using purely CG elements because of a bad experience on a previous film. They had apprehensions about CG's ability to deliver and wanted to rely on it as little as possible. So Ashford developed a test to strengthen their confidence. She had Viewpoint Labs model a high-resolution F-18 that would hold up in full-frame shots if needed. Even though this was beyond the requirements of the shots at that time, her instincts told her that Emmerich would possibly request it by the end of the show.

Soon, CG was enhancing virtually every sequence.

Arrival

For *ID4's* signature shots of massive alien Destroyers eclipsing the sun over various national monuments in Washington D.C., Engel's crew employed large-scale miniature replicas. They were photographed live, outdoors and with some surprising shadow-casters: large canvas sheets on scissorlifts blacked out the White House and Statue of Liberty; a flag lowered on C-stands darkened the Lincoln Memorial; and a truck was backed up to overshadow the Washington Monument.

Wide shots of the sinister shadows creeping over Washington, and other cities were created by Ashford's digital unit, which composited digital shadows over plates of the real cities.

The Destroyers were envisioned by Tatopoulos as being domelike on top with a gigantic fin rising from a recessed dish at the rear. Although the Destroyers supposedly measure 15 miles in diameter, *ID4*'s workhorse model was a somewhat modest 12' wide; a 4' version was used for one long shot.

To add life to the interstellar vessels, Emmerich wanted them to be rotating constantly. The models were therefore mounted on pylons from above, with an exter-

Right: ***F-18s engage the aliens over what's left of Los Angeles. Ashford and Turner's CG unit created all of the aircraft, missiles and exhaust trails for this shot. Pacific Ocean Post then handled the compositing. For more complex dogfight sequences, VisionArt's Rob Bredow set up a procedural code to easily add or subtract the CG aircraft from shots. The digital crew often hooked up CG F-18s and Attackers to practical exploding models.***
Far right: ***Alien ships assault the El Toro Air Base. ID4's CG unit created the manta-ray shaped Attackers, which were later composited at POP with location plate photography for this shot. The aliens' "light ball" weapons were originally to be created with traditional rotoscoping techniques, but a digital solution was eventually employed.***

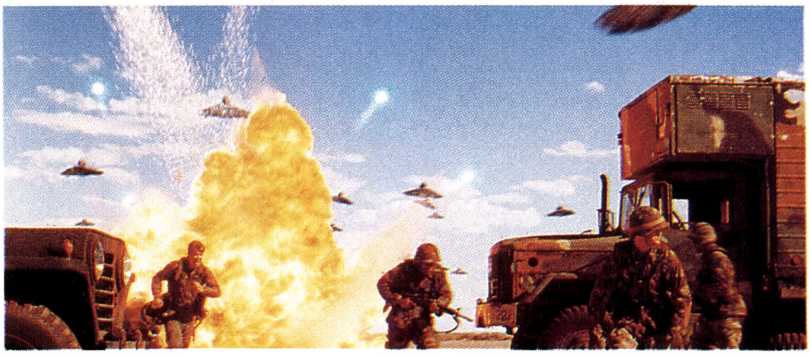
nal motor creating the movement. "That meant virtually every shot had to be done with motion control," Smith says.

To enhance the massiveness of the stellar craft, it was necessary to lessen the detail at a distance and then increase it for the closer shots. Emmerich ordered a 35' pie-shaped Destroyer top- and underside section built, one of the largest motion-control miniatures ever constructed. "Doug and I split this 50-50," Engel says. "We didn't plan to build it, but when Roland wanted to get really close to the Destroyer's edge during the desert dogfight, we felt the limitations of the 12' model."

The firing mechanism of the Destroyer, located on the underside, was called the "schism." On the 12' model, the schism measured 3" across. As a separate motion-control model, it measured 8'. Within the 8' schism, five motors performed a complex flowering motion, opening the port's petal-like doors and propelling rods on its perimeter toward the probe descending from its center.

Battlefield Earth

Ashford's team was soon handed its first alien battle shots, with the required elements including the Destroyers' destruction beams and particle balls, the Attackers' light ball fire, and their protective shields. "They all have this greenish tinge, because you know that everything alien is green!" Ashford quips. Originally slated as a traditional rotoscoping effect, the Destroyers' 'wall of destruction,' an intense maelstrom of firepower that levels entire cities in one fell swoop, became a prime candidate for a CG solution. "It's not a single beam, however," she explains. "First, this long green ray



descends, like a targeting system. Next, a particle ball collects into this huge energy blast, and rides the beam down to the target, which then explodes. The beam was a tubular 3-D wireframe modeled in Alias by Stephane Couture, who also created the particle balls using particle animation. They grade between green and white to show their intense power."

The pyrotechnic results of these "walls of destruction" — *ID4*'s twist on *War of the Worlds*' Martian death ray — were engineered by demolition man Joe "Boom Boom" Viskocil (*Star Wars*), who blasted flaming death through the streets of Washington D.C., Manhattan, Los Angeles and other popular tourist destinations, using high-speed explosives and elaborate miniatures.

Although much of the destruction was shot high-speed, not everything was done in-camera. To raze the Empire State Building, Engel and crew shot an 14' miniature as a separate element lying on its side, which Viskocil had stuffed with 10 charges timed to explode from top to bottom. "That was the easiest way to rig it and to get the perspectives we needed," Engel reveals. "One camera shot it from below and another shot a wide angle up from the street. The second was part of a larger shot with the Destroyer firing its beam from above, as this 'wall of destruction' grows out of the Empire State Building's epicenter and moves toward the camera. We had all of these different elements: model buildings exploding on both sides of the street, model cars tossed by air pressure, and lots of debris. The only practical elements were the people we shot in front of green-screen with some foreground cars stuck in traffic. The final composites are pretty scary. You see the whole building explode from top to bottom right toward you! It's a really nightmarish feeling."

When a squadron of F-18 fighter planes attempts to bring down a Destroyer over the ruins of Los Angeles, the pilots quickly learn that it's loaded with craft that can easily outrun them. Designed by Tatopoulos, the manta-ray-shaped Attackers sport bug-like pincers up front and a large shark-like dorsal fin on their backs. Smith shot motion-control, using 2' scratch-built F-18 models, and 2' and 4' Attackers. "When we tracked with an Attacker and the model sat in front of camera for awhile," Smith explains, "we used the 4' model for a high level of detail. But when they just whipped by camera, we used the two-footer."

Both the Destroyers and Attackers are protected by powerful shielding. "The shields are invisible until the F-18s fire at them, then this green forcefield becomes visible around the spaceships," Ashford describes. "VisionArt came up with a recipe to cause refractions that distorted the background plate, like a glass shield layer. But we had far more elements than that. We composited the 12' Destroyer over the land-

scape, along with miniature Attackers and up to seven F-18s in each of many, many squadrons. Then we added CG missiles, each with a CG smoke trail, exploding against the shields. This meant compositing in pyro elements and shield effects. These weren't your standard effects sequences; an average effects shot would have three to five elements and run about three to five seconds. *Independence Day*'s shots involved an average of 20 to 30 layers and tended to run for 10 to 15 seconds!"

As the dogfight goes sour, two F-18s try to elude the Attackers by diving into the Grand Canyon. Smith first supervised the shooting of the aerial footage — not in the Grand Canyon, which was off-limits, but in the neighboring Little Colorado Canyon — from a World War II-era T-28 trainer that its pilot/owner had transformed into a camera plane by mounting Arris where gas tanks or bombs might have been. Says Smith, "We flew that thing at 90-degree banks, trying not to crash into the canyon walls."

Since there is no known way to shoot motioncontrol from a plane, Smith's crew match-moved their motion-control models to a video playback of the careening footage. "The camera plane moved constantly, so we did frame-by-frame programming to get our shots to line up at the other end," Smith explains. "If our F-18s and Attackers weren't perfectly locked to the plate, they began sliding against the background instead of flying."

Engel's crew created some background plates for the sequence as well, dollying a Mitchell camera through a 6'-high canyon model. But whether Smith's motion-control models were composited over real aerial backgrounds or miniature canyons, he created interactive lighting to marry them with the plates. "We re-created the shadows that the Attackers and F-18s were supposedly flying through," Smith says. "In fill situations, we tracked the bounce light on the lit canyon walls, then used bounce cards to vary the lighting on our models."

For the chase's spectacular climax, Engel flew both Attackers and F-18s on wires through a 15'-tall miniature canyon set up outside at Hughes with real sky behind it. As an F-18 crashes into the canyon, the pursuing Attacker bursts through the blazing fireball. To catapult the plane to its high-speed destruction against the canyon, Engel's crew threaded two guide wires through the set, then ran a powerful bungee rig from outside the canyon model to the nose of a 5' fighter model. While the rig was being cocked and loaded for this admitted homage to *Star Wars*' Death Star trench sequence — the F-18s' profiles are even reminiscent of X-wing fighters — Joe Viskocil rigged the fireball. When the F-18 was launched, it was up to the pyrotechnician to sync the explosion. "Everything was in-camera, so we really relied on Joe's eye," Engel admits. "He'd see the ship coming at the canyon wall, then trigger the explosion at the right moment!"

After the Attacker soars through the explosion, it makes a spectacular skid within the Grand Canyon. Preferring large-scale miniatures for convincing interaction with pyro and dirt, Engel rigged a 4' Attacker so it too could bungee-jump to its destruction on a forced-perspective miniature set that Mike Joyce's model makers built outside Hangar 45. "We prescored the ground, digging a trench which we filled with lightweight material and Fuller's earth to create a big explosion of dust and debris," Engel remembers. "Then we attached the bungee to a metal wire connected to the front of the Attacker, which we mounted on a rig that held the bungee taut. When we hit a button, the Attacker sling-shotted away, bouncing to a stop in the miniature landscape. We shot the scene from behind and from the side at about 120 fps. Although the effect was mostly in-camera, this was a real wire-removal job."

In addition to that, Ashford's digital unit came in with the image-tracking capabilities to composite and fine-tune these elements into the completed shots.

An enthralling *Return of the Jedi*-style dogfight over Area 51 taxed both model and digital units to the max. Emmerich wanted hundreds of F-18s and Attackers

swarming under a massive Destroyer in the stark Nevada desert. Joyce's crew built the landscape miniature on a round, elevated platform with removable pie-shaped sections; this enabled Engel to move his lightweight Genuflex motion-control rig around the rotating 12' Destroyer, which had been suspended above the set for extra coverage. But when Emmerich asked Engel to fly a camera through the tight space between the Destroyer and the landscape, the production cameras couldn't fit. Undefeated, Engel and effects cinematographer Anna Foerster, who shot all the Destroyer footage, used Clairmont Camera's 7"-tall Mitchell GC Low Profile camera, one of three in the world, to creep through the narrow gap. This, combined with other sweeping background plates, conveyed half the sequence's excitement. Emmerich hoped that the motion-control Attackers and F-18s would do the rest.

Emmerich's initial approach was to strictly utilize CG jets and alien ships in the background of such shots. However, Ashford's previous F-18 test convinced him that CG aircraft could be used for hero elements. In fact, the director became so enchanted with CG, he soon wanted bigger dogfights, and more of them, over Area 51.

But Ashford knew that if her animators had to do individual keyframe animation for every Attacker and F-18 in each shot, they might never finish the film in time. She says, "We were up against the wall with the schedule, and my digital unit was asked to step in to take on these elements as CG animation." She consulted VisionArt's Josh Rose and Rob Bredow, who created a customized flocking program based on the Attacker and F-18 flight patterns.

There was just one catch. Editor David Brenner and Emmerich couldn't cut the dogfight sequence without Ashford's CG shots, but her animators couldn't do those shots until they had the framecounts. At this point, Ashford's decision to keep the CG effects department primarily at POP began paying off: Mark Colby created rough animatics by pre-compositing the F-18s and Attackers on an Avid, which enabled Emmerich to cut the sequence and give Ashford's unit the proper framecounts. Suddenly, CG was part of the shooting process, rather than the postproduction endgame, allowing them to reconceive shots faster and more cheaply. "We created elements as they shot. If I didn't have a negative, I'd import video dailies so we could start doing rough animation."

When global air strikes are mounted to fight the Destroyers, which have positioned themselves over all of Earth's major cities, it's up to a hotshot pilot (Will Smith) and a brainy scientist (Jeff Goldblum) to fly a primitive Attacker into the bowels of the Mothership. But is there time enough to take it down?

Ask Doug Smith, whose motion-control unit had sole authority over the Mothership. Tatopoulos' design was a 600-mile-wide half-egg, with two gigantic vertical stabilizers emerging from the flat top section; in reality, the Mothership miniature was only 12' in diameter. If Smith's crew had trouble selling the scale of the 15-mile-wide Destroyers, imagine what they went through to make the Mothership appear real! "It's really hard to convey the scale of anything that's hundreds of miles wide as you get close to it," Smith explains. "The trick was using lighting to hide any scale problems. It's a delicate balance between giving some information and giving too much. We kept the Mothership mysterious to create a sense of hugeness."

Fortunately, the Texas-sized war machine, revealed for the first time when the commandeered Attacker approaches, was always surrounded by the basic black of outer space, which helped both photographically and from a compositing standpoint.

Sneaking in through an access tunnel, our heroes' ship enters a giant open cortex area dotted with huge towers. This bizarre landscape was a simple, spare set measuring 50' wide by 80' long with 14' tall columns laid out in a smoked room in Hughes' Hangar 45. In the final compositing, Ashford's team rearraigned pieces

We salute the talents of our "Independence Day" clients

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of the set, adding more towers and detail, and put in a lot of activity to create more atmosphere, including fiber-optic elements recycled from other shots placed in the background and then given motion.

The pirated Attacker soon reaches the cortex, an inverted cone surrounded by innumerable docking platforms and long, narrow transport ships poised to deliver millions of invading insectoid aliens to Earth. "We combined the cortex area with the towers, keeping the cone off in the distance," Smith says. "The cone miniature measured about 10' across and 7' tall, and hovered point-down above a big flat platform, the staging area for loading all the transports. We assisted the digital unit in compositing the alien troops by repeating our motion-control move with targets throughout the set, indicating the staging platform's surface."

On another difficult shot, "Roland wanted to create a pan across the model, but there wasn't enough miniature background," Ashford says. "We shot the model in sections, then Pablo Helman tiled it in the computer to create a larger background. Using the Inferno, he cloned the boarding aliens, put them on the path leading towards the transport, added the green atmosphere and the CG fly-by of the hijacked Attacker, and then placed the pan over the composite."

The cloning and tracking of the aliens was exceptionally complex, but was achieved with VisionArts' proprietary tracking software.

The impressive end result of all this work is a tribute to Roland Emmerich and Dean Devlin's vision and to the hundreds of artists and technicians who made the impossible believable. "It's a very difficult process to make 4,000-some-odd elements all come together," Ashford muses. "I think all the artists on this show deserve a standing ovation."

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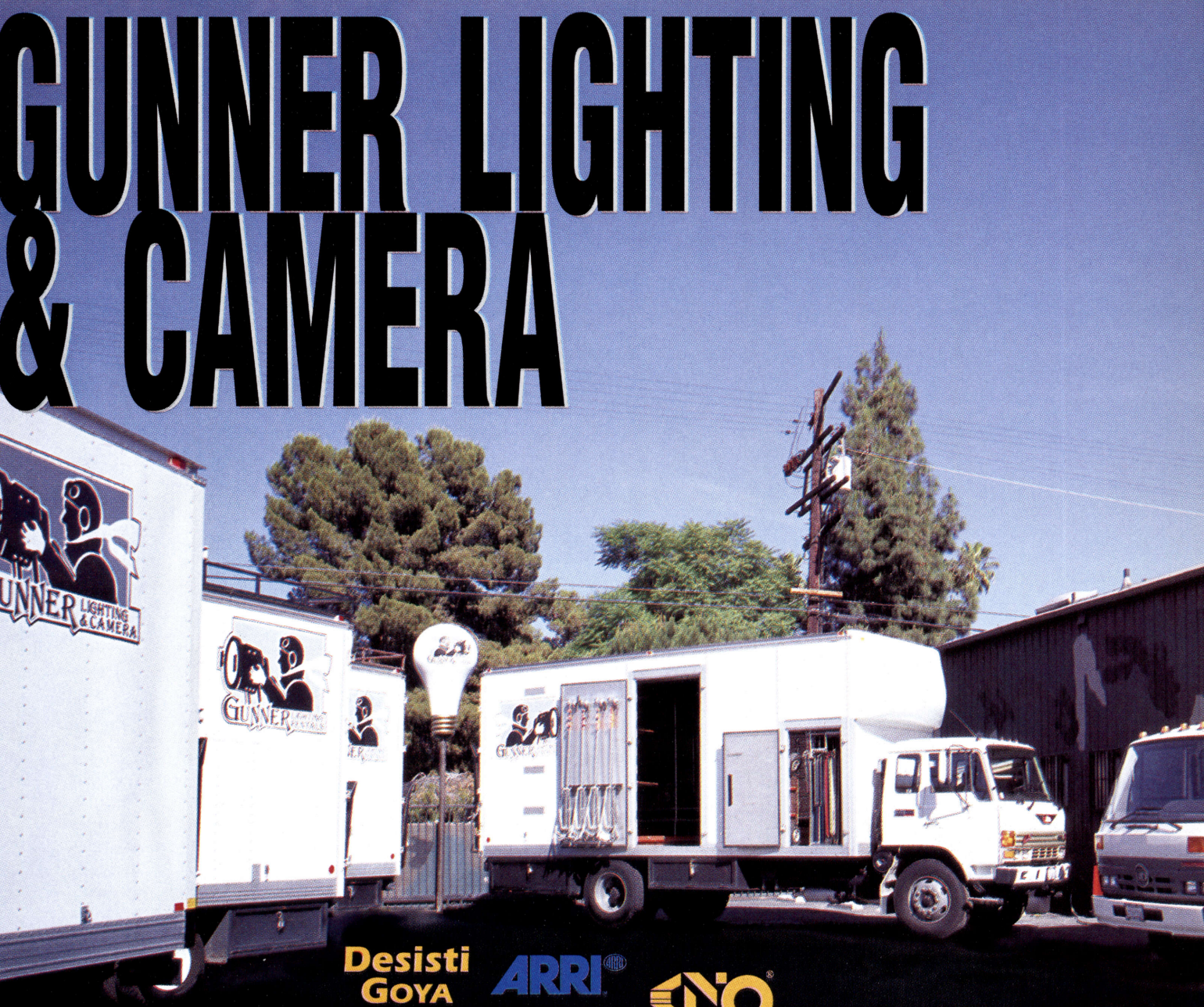

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Send in the Clones

Laszlo Kovacs, ASC works with Richard Edlund, ASC and Boss Film to create a menagerie of Michael Keatons in *Multiplicity*.

by Les Paul Robley

IN COLUMBIA PICTURES' *MULTIPLICITY*, too many commitments and not enough time are problems for Doug Kinney (Michael Keaton). With work, family and personal needs all vying for his attention, Doug decides to become the ultimate split personality by having himself cloned three times. Naturally, this decision creates trouble for Doug; but the fictional dilemma also caused craziness for the film's production crew.

To achieve this film's slapstick scenario, director Harold Ramis (*Groundhog Day*) called upon the expertise of cinematographer Laszlo Kovacs, ASC, effects wizard Richard Edlund, ASC and Boss Film Studios. Working together, the *Multiplicity* team was able to present up to four Michael Keatons onscreen at the same time, creating the illusion of four identical actors playing distinctly different characters throughout the film.

"I welcomed the idea very much," says Kovacs, whose credits range from the anti-establishment classic *Easy Rider* to the recent thriller *Copycat*. "I had worked with [Ramis and Edlund] before, on the first *Ghostbusters*. But back then, everything was optical, as opposed to now, when everything is digital. This film presented some interesting and different problems to solve. The digital process is so natural that it seemed as if the script had been invented for it."

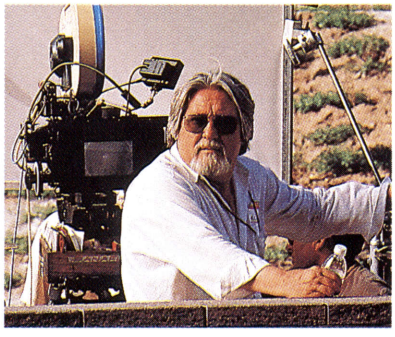
Multiplicity was the kind of project that required the presence of the visual effects supervisor for every effects shot. And in that role, Edlund had input on physical action, shot blocking and whether the use of greenscreen was required to replace a background digitally. But as Kovacs notes with good cheer, "I had to execute it! This film is a perfect example of a close working relationship between a visual effects supervisor and a cinematographer."

The cinematic approach for the clone sequences was to cover and block the scenes as if there were in fact four different actors playing four different parts. The production used wide master shots that would include all four characters, plus conventional over-the-shoulder singles and two-shots that included each of them at least once.

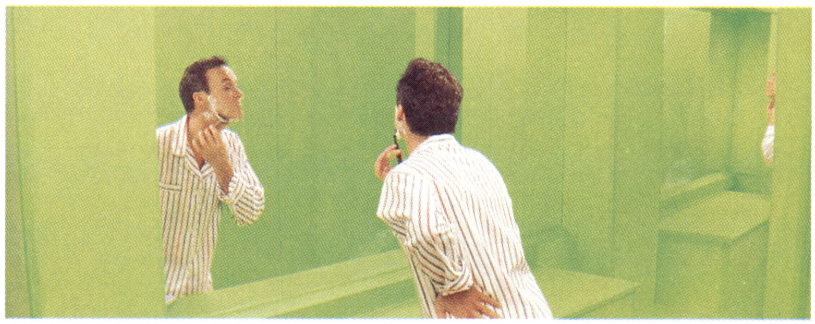
During preparation, it was decided to storyboard all scenes in which the clones appeared together. This was done so that the studio would know how much the scenes would cost and how many composites were needed, and so Michael Keaton could understand the rough structure of the scenes. The boards also enabled the digital effects artists to position him appropriately and create convincing composites.

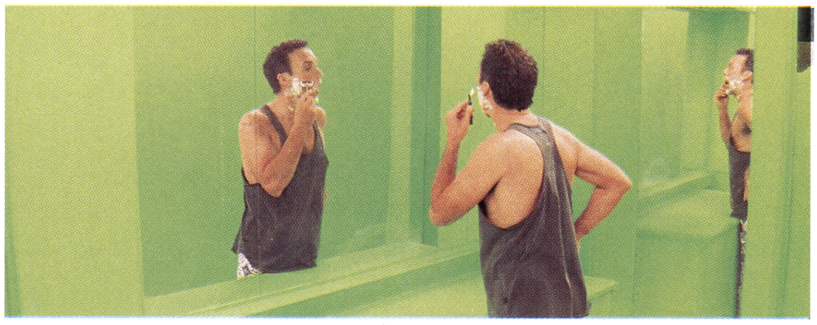
"It was very complicated for Michael," Kovacs attests. "Many times he was carrying an entire sequence, because there were no other actors involved. Mentally, he was so tired that sometimes by five o'clock he would say, 'I can't do it anymore. I've totally lost it.' So we'd leave everything and go home.

"Sometimes we changed the storyboards when Harold [Ramis] felt that a scene [worked so well in one shot] that it didn't require any further coverage. For the sofa scene, for example, we showed all three clones and Doug and there was no reason to cut it for coverage. It played so credibly because the characters had physical interaction with each other."



Photos by Stephen Vaughan and composites, courtesy of Columbia TriStar Motion Picture Companies.





Opposite page: ***Keaton and his three clones spruce up together. The individual greenscreen elements appear on this page at immediate left.*** **This page, far left, top photo:** ***Special effects supervisor Richard Edlund, ASC uses a prop "face" to provide Keaton with an eyeline for one of the clones, who will later be composited into the empty space.*** **Below:** ***Cinematographer Laszlo Kovacs, ASC says that he enjoyed working closely with Edlund to achieve the film's unique visual trickery.***

Multiple Lighting

In addition to elaborate storyboards, on-set rehearsals were needed to aid Kovacs in lighting the set and to help Edlund's crew determine the best blocking for the final composites. "We had stand-ins for each of the different characters Michael was playing," recalls Kovacs. "He would play against them to determine the blocking and get an idea of where he would take the scene. For each particular setup, he'd first play the main character, whichever one drove the scene. Then they'd switch parts. If Michael tried playing Clone 2 and found that it wasn't working well for him, we'd go back and change the situation or the blocking. This process would then go down the line to Clones 3 and 4. Many times it took the better part of the day just to rehearse a scene and make sure that it felt good for the actor, the director, and also for me."

It was very important to have the Keaton's movements choreographed down to the last detail, because they could dictate the lighting for a scene. "We could not have any shadow contamination from one pass to the next," says Kovacs, "since it would be almost impossible to match during subsequent passes. Boss would have had do something digitally in post, which would create a major expense in terms of time and money. Harold gave me tremendous freedom in terms of making suggestions and offering ideas if I felt there were potential problems in a scene — say, if actors were maybe too close to one another, and the casting of shadows was unavoidable. Richard was also very helpful in solving these problems. Once I decided how I was going to light the scene and we put down the first pass, I couldn't change anything. I couldn't add an extra fill light, or tweak a key or even replace a burnout due to [the possibility of] light contamination."

Kovacs could only change a light when there was a greenscreen background and that area had not been part of a previous pass. In such situations he could make adjustments by examining a freeze-frame taken of the previous pass, but those instances were extremely rare. "When I said I was ready, I was prepared to commit myself 100 percent until I saw the final result," he adds, noting that the "final" stage was usually many months down the line.

During prep, Kovacs scouted locations and met with production designer Jack DeGovia, a process that provided him an his overall strategy for the look and texture of the film. He explains, "I felt that the most important thing for this story, even though it is a comedy, was to give it a sense of credibility — a real environment, real sources and sets, and real situations. Because of that, I tried to follow the sources very strongly. If there was a window, I made sure the window became the source. If there were practicals such as table lamps, we strove for the best possible lamp to follow the source of that type of light. This happens throughout the course of a normal shoot, but this was not a normal shoot. On this project, 'normality' had a totally different meaning.

"Then there were the possible shadow problems when the actors started moving. To me it was not always very visible because, during rehearsals, the stand-ins were not always doing things the way Michael might later on. He often changed things [on the set,] and those changes weren't included in my plan. So I was concerned that when he was doing something with his hands, they might cast a wrong shadow or go through a source and ruin the shot. At the same time, the scene had to look very real. If you don't create a reality for this kind of visual trickery, the audience is going to start being very suspicious and wonder how it was done."

During preproduction, the filmmakers made another important decision concerning location exteriors, such as the house where Doug and his wife (Andie MacDowell) live. The actual Pasadena location included a two-story family home with a long driveway and the facade of a guest house (where the clones hide from Doug's wife) placed above the garage. These exteriors established tie-in shots of the clones arriving, or the wife leaving the house. However, there were also many scenes involving Doug and all three clones in the backyard and inside the house. These could not be made on location; if the light changed, the consistency between one pass and the next could be jeopardized.

"You can't have four different color backgrounds," Kovacs points out, "so we had to duplicate that whole property on massive stage 15 at Sony Studios. The set was in one-to-one scale, though we shortened the distance a bit between the garage and the main building.

"The big problem in recreating a daylight exterior is duplicating a single-source sunlight effect. I didn't want to see a person walking and two or three shadows following him. That's an immediate giveaway. So I used huge Mole-Richardson 20K spotlights which have a very powerful, even, wide-spread beam. I used about three major angles when I was covering the backside of the house to the garage — where wide action was occurring.

"The number two 20K wasn't wide enough to cover the backyard garage," he notes. "But [production designer] Jack DeGovia came up with the idea of adding an arbor about 12 feet away from the garage building, exactly where the edge of one lamp was giving way to another. That idea worked wonderfully, and saved me from having the double shadow. Plus, the huge tree built in the middle of the courtyard scattered any shadow problems."

Duplication Setups

The very first visual effects shot for *Multiplicity* was filmed at the Skirball Institute in Los Angeles, where Doug is introduced to the cloning process. The location proved to be a pandemonium of construction equipment and cables because the new Institute was still under construction.

The shot involved each of the axis components of a Kuper motion-control system: a dolly, boom, pan, tilt and focus change. As a result, the floor became a rat's nest of motion-control servo cables, video lines and encoder cables. I served as motion-control operator throughout the 100-day shoot, with Landen Ruddell and Bill Klinger as dolly technicians. Servo motors were chosen to power the dolly and gear head for quiet operation during live sound recordings. Jeff Platt and Donny Sierer were the electronics techs who put it all together in sync with the Panavision camera, Pro Tools time code, motion-control rigs and Silicon Graphics (SGI) computer workstations (situated in a mobile trailer outside the Institute due to possible noise contamination from the computer fans and hard-drives).

Klinger and Ruddell used machinist's gauges mounted on a heavy steel track to make sure the friction-wheeled dolly always started from the same position for every take. Since a friction-pinch roller was needed to reduce the noise one would get from a standard mo-co belt-driven system, shots could only be made while moving in one direction. The crew compensated for backlash by rolling the dolly slightly further in one direction, then moving it back in

the direction of travel to set a zero home position.

Rough rehearsals were accomplished with Preston either pushing the dolly by hand (an encoder on the wheel recorded the curvature of the move), or using a hot wheels arrangement (similar to a pan-tilt hothead) that actuated the dolly and boom. The actual movement was calibrated in inches, and I set software limits to prevent the dolly from overshooting its mark and rolling off the edge of the track or banging into a wall. Sometimes we would squeeze or stretch the dolly move to make it stop or roll beyond a selected point, depending on what the director or cinematographer wanted during rehearsals.

When it came time to roll film for an actual first pass, the dolly was operated by the encoder wheels (as were the pan, tilt, boom and focus), with joystick limits set for maximum smoothing so that the track would slam into its end position each time without fail. This was done because the dolly could not repeat a pass exactly when pushed manually, since slight variations in friction slippage would occur. The dolly was only dead-on when operated remotely by hothead control, since any slippage would repeat by the same amount for subsequent passes. This was ascertained during field chart tests at the prep stage.

Once a circled take was laid down on the Kuper RTMC130 software, a move could not be changed or smoothed in any way. Even the focus axis (recorded by first assistant camera Zoran Veselic) and the pan and tilt (operated by Michael Stone) could not be adjusted, since any discrepancy would mismatch the original take played back by the SGI computers.

A first pass proceeded as follows: Pro Tools operator Peter Brancaccio began the time code, which was hard-wired to mo-co and the SGI machines with a 20-second countdown. The camera rolled at 10 seconds and sync lock was established via a Panavision-to-Kuper sync cable pre-set to 24 frames in the software. The time code trigger point was input at 00:00:20:04 seconds (the :04 frames resulted as a consistent offset). A

bloop light attached to the video time code slate (operated by second assistant camera Michael Gurasich) signaled the first frame of motion-control movement on film and video. This sync point was later used to re-align all subsequent digital passes in postproduction at Boss, and as a check point for real-time traveling split playback on the set to make sure everyone was in sync.

Boss Film's real-time traveling split process was developed by Gautham Krishnamurti, Shahril Ibrahim and Hiro Miyoshi. "The software enabled us to play back video off the SGI computers and blend it at the same time with incoming video, compositing them together using some kind of chroma-key or luma-key function," explains Krishnamurti.

"Seeing composites in real time was not only great for the director and Michael to check eye level, but also for me," admits Kovacs. "I had to check for shadows and problems that might occur in the subsequent takes. When we saw a problem in the second or third pass, the only thing we could do was change his placement slightly to avoid a shadow crossover or green spill. Only one time were we able to change a light when there was a greenscreen background, because the affected area hadn't yet appeared on a previous pass."

Video monitors synced to time code were sometimes employed, to enable Keaton to play against himself while electronic earpieces allowed him to hear his previous dialogue and time his responses.

Once a first pass was recorded and approved by director Ramis, nothing in the move or set could be altered. All subsequent passes with Keaton in different roles depended on that original take as the basis for all action. "My crew learned the nature of this type of cinematography very quickly," says Kovacs. "We had to leave the set as a hot set and walk away from it while Michael Keaton changed into another character and took on a different personality [and the SGI workstations rotoscoped the traveling splits.]"

The camera crew took extra care in changing film magazines so as not to bump the camera in these locked-off positions. Kovacs had to complete all passes on the same film report because of the possibility of day-to-day variations in negative processing at Technicolor. There could be as much as a point difference in color shift, which would cause a problem securing color consistency from one pass to the next. As a result, the crew kept the film until the entire shot of up to four passes was completed; only then would they give it to the lab. "Some days there were no dailies, and the lab wondered if we had taken the day off," Kovacs recalls with a chuckle.

If the crew had to stop between takes, freeze frames were grabbed on the Panasonic MX-12 video mixer (or recorded on tape) to make certain nothing moved on set or in the camera.

As another precaution, clean passes minus actors — with and without greenscreen — were always made in order to correct mismatches in camera movement, body placement, limb lineups or background contamination. "Clean passes were only helpful for the background, basically," Kovacs reveals. "What happens in the foreground between the characters is that they cast shadows on one another, and then you have a problem. Let's say on the first pass my hand's shadow goes over your arm; when [Michael] plays that clone in a later pass, the stand-in can't match that, because he can't see it and doesn't know where it comes from. Stand-ins often held video cameras next to their heads to record Michael's acting — which could be played back just in case he needed it for a particular body movement."

To an outsider it must have looked like a very lax production. The crew would often stage basketball tournaments, shoot pool, play ping-pong or even take turns with a flight simulator on the SGI machines to relieve the endless waiting. "It took patience," says Kovacs, "and we couldn't afford to slack off because we couldn't make changes after the initial pass, which was usually a half day's work. We had about 50 to 60 people working on each single shot, which isn't

normal, especially when you have only one actor in a scene. That tested everyone's patience, because everything took a long time. It's very easy to allow mistakes, so you have to be doubly careful. The 60 crew members sometimes seemed to be standing around doing nothing, but in those moments when the chips were down, all 60 were suddenly working."

With experience, the Boss Film crew became much faster lining up each complicated effects sequence. But Kovacs was sometimes like a champion steed bursting at the reins on set, waiting for them to set up the camera dolly and hothead.

Asked if this process slowed him down considerably, the veteran cameraman replies, "Not really, because that was all part of the plan. We knew that certain things would take time, and that something to this extent [using real-time traveling mattes] had never been done."

Setting up the motion-control track always took time, because the heavy 10-and 20-foot sections had to be laid out, leveled and cleaned. Additionally, the crew had to mount the dolly, set the gauges, and encode the move. For non-dolly shots, the servo-controlled gear head was usually stuck upon a massive iron tripod.

Special circumstances occurred when Keaton entered a room and flipped on a light switch, or took a shower while an electrical storm flashed through the window. In these cases, practicals and the Lightning Strikes system were controlled via the Kuper editbits function, and sequenced to turn on at the same frame during subsequent passes. For example, if Keaton turned on the light switch for the first pass, someone watching on-set would cue the light gag remotely at the same instant. Later, while the SGI created its splits and Keaton changed costume, Roger Johnson and the mo-co operator determined the exact film frame at which the light came on. This moment was programmed into the Kuper and rigged to light up via computer. A succession of beeps in Keaton's earpiece prompted him to hit the light switch again at the appropriate time, if action in the second or third pass required him to do so.

Other unusual situations involved stand-ins wearing greenscreen suits for high-fives and "chest bumps," or the creation of greenscreens with special holes so one character could blow cigarette smoke into a clone's face. These devices enabled Keaton's characters to react with each other very intimately. Two scenes in particular involved an item being passed from one clone to another In one, Keaton hands a plate of sandwiches to himself; in the other, Doug hands a beer to newly created Clone 3. These scenes employed an arm-replacement technique whereby a stand-in wearing Doug's clothing handed the object to Keaton as Clone 3 in the first pass. The original stand-in's body was matted out and Keaton was placed in the identical position for the second pass. Keaton as Doug later matched his body movement as if he were handing the item to himself. A dolly movement added to the whole effect and helped disguise the trick. However, the perspective change not only made it difficult to line up Keaton's body in the precisely correct position, but added problems in achieving a safe split.

"[That technique] worked very well in scenes with dynamics of a pan and dolly, ending in a three-shot," recalls Kovacs. "When you see all three characters played by the same actor, it creates a fabulous credibility. Many times we tried to avoid scenes involving physical contact or shots of the clones crossing behind one another for budgetary reasons, since we were limited in terms of how many visual effects we could do. Later on, though, we wished we had been bolder because those are the scenes that work really well and don't telegraph to the audience that it's an effects shot."

Camerawork for Clones

Kovacs never considered shooting a larger negative, such as VistaVision, to increase the image size for compositing the film's complicated visual effects. In fact, he suggested the use of anamorphic to avoid this prospect altogether. "Anamorphic uses the full

35mm frame from perf to perf with a very thin frame line on top and bottom," he notes. "That's why the picture quality is so superior to 1.85, with richer blacks, deeper saturation, better grain and sharpness. I wanted to go with [anamorphic] so we wouldn't have to change formats every time there was an effects shot.

"Another consideration was composition. Because there were as many as four Michael Keatons in one shot, the horizontal frame is very important when you have so many characters appearing at one time. We really used the entire field from edge-to-edge, and I think it will force the video distributor and cable company to either go letterbox or lose half the action. This film should really test the philosophy of showing full-frame to a cable audience."

> "We really used the entire field from edge-to-edge, and I think it will force the video distributor and cable company to either go letterbox or lose half the action."
>
> —Laszlo Kovacs, ASC

In running down his choice of lenses, Kovacs relates, "I originally started with Panavision Primo lenses, then went to regular C- and E-Series lenses."

Kovacs abandoned the Primo lenses, even though they are considered optically sharper than the C- and E-Series units, because he did not want a microscopically sharp image that reproduced every pore or defect on the skin. This is why the Soft/FX-2 filter is a particular favorite of his. "In close-ups, it gives a slight diffusion on faces and skin tones. I consider the Soft/FX series of filters to be magical; they really don't affect sharpness or contrast amazingly, but they hide little blemishes on the skin, especially on female portraits. I used a Soft/FX on every single shot because I didn't want to add another variable to the visual effects roster, which could add to confusion for the eye.

From my previous picture, *Copycat*, I had a set of perfectly matched C- and E-Series lenses which went from 35mm to 100mm. But still I had a major problem with the series, because with prime lenses of 40, 50, 75, 85 and 100mm, I was missing an important focal length between 50 and 75mm. A 50mm has a slight wide-angle look, and a 75mm is already on the larger end of the focal length. I needed a 60mm, and I kept begging Panavision: 'Please, make me a 60mm.'"

Two months into production, Panavision's Phil Radin and Larry Hezzelwood showed up on the set with a brand-new lens box bearing Kovacs' name. Inside was their gift to *Multiplicity:* a C-Series 60mm lens.

Kovacs had asked Jack DeGovia to make all interiors 25% larger than normal. "The dolly movement and character placement inside was very important," he said. "With the right lens, you can make [the space] look either bigger or shorter. The 60mm lens was like a blessing, because suddenly we had the answer. When a shot required all four clones, obviously I had to use a wide-angle lens. I couldn't use a 75mm, because it was too tight. Even a 50mm was a compromise because, with anamorphic, it was too wide. We'd have to foreshorten the distances so the guest-house set wouldn't look like Grand Central Station."

Kovacs also kept his aperture consistent, working at T4 throughout the show except while doing motion-control dolly moves; in those situations he would raise it for the extra depth of field, as everything that had to do with the camera was unalterable, including focus.

Such considerations also dictated Kovacs' choice of film stocks. He used 5298 for all greenscreen applications and 5296 for all non-greenscreen interiors. "My decision at the beginning was to use the 96 because the quality gives you a softer rendition of the spectrum and a lower contrast ratio than 98. I later discovered that the 96 is very close to 98; when we used the greenscreen with 98, the

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other scenes which were shot on the 96 in the same sequence came out on the same printing light. The dailies looked identical.

"When Kodak introduces a stock, they constantly improve it. If it lacks in contrast, blacks or saturation, they improve it with each batch. They have perfected the 96 so that it has the fine-grain structure of 98. When we did the compositing between the shots made on 96 and those shot on 98, they came out with very much the same printing lights. Also, the contrast ratio was nearly identical. I could have used 98 all the way through, except for the exteriors."

Pondering the image quality of film that has been digitally recorded for effects work, Kovacs notes, "There is a very slight quality change — I don't use the word 'loss' — when you go through the digital compositing process and match to the original camera negative. But you can digitally manipulate the contrast level to match the original 96 negative. After the test preview sessions, we went back and really nit-picked the fine details when we had more time.

"There are always two areas which are very critical: contrast and grain [or sharpness,]" continues Kovacs. "So far, we've only had to re-do four shots out of 40, which is very good. Bob Kaiser, my answer print timer for many years, was very impressed. He told me we only have to worry about those two areas because they are the factors we can't change.

"Basically, my negative was very consistent in the one-light workprint, so [the lab] didn't have the problem of having to correct one side against the other. This made it very easy and very fast so they could concentrate on the splits and mattes. Even when we do an initial eye-line test composite, I'm really surprised because the contrast, sharpness and color are all very good to start with, and I haven't had to touch the color."

Despite the exacting nature of this production, Kovacs says he would gladly return for a *Multiplicity* sequel. "Waiting for the special effects was not a problem," he asserts. "It was simply important to have patience and to understand the nature of the beast."

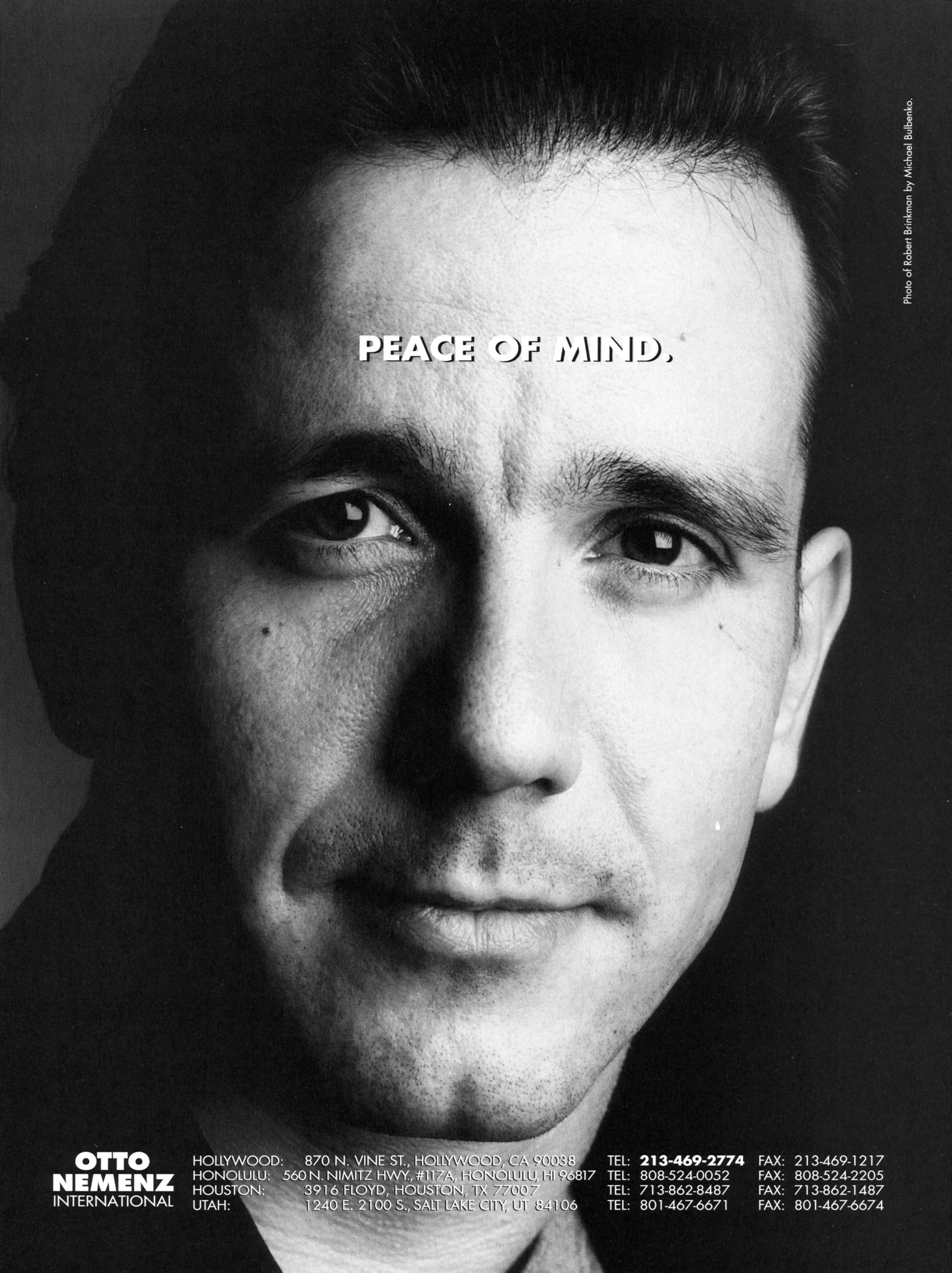

Photo of Robert Brinkman by Michael Bulbenko.

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Phenomenon Dazzles the Eye

Director of photography Phedon Papamichael lends a sense of wonder to a magical tale of transformation.

by Stephen Ashton

NESTLED AGAINST THE SIERRA FOOTHILLS lies the California Gold Country town of Auburn. Snugly ensconced in its central block is the Shanghai Restaurant and Bar, the location for *Phenomenon's* Elkhorn Bar. It is here that a local mechanic and farmer named George Malley (John Travolta) tells the town physician, Doc (Robert Duvall) that he seems to be developing some astounding abilities — including telekinesis and the ability to learn at the pace of a super-genius.

With memorabilia dating back to the Great Depression dotting its wainscotted, tobacco-stained walls, the Shanghai is an almost ready-made set for *Phenomenon*'s production designer, Garreth Stover. The local haunt offers a color scheme of earth colors — browns, yellows, and burnt red. Director Jon Turteltaub (see sidebar interview) has asked his team to exploit the establishment's authentic charms; heading up the effort is cinematographer Phedon Papamichael.

The Shanghai is blessed with a very high ceiling, making the narrow space as tall as it is wide. Papamichael has taken advantage of this feature by hanging an overhead bank of "custom coops" (each wired to a dimmer board) to provide soft top light. "My gaffer, Ian Kincaid, designed and built them," says Papamichael. "They each have four 500-watt bulbs, a translucent bottom and four side panels with skirts that can be rolled up individually to fine-tune the amount of spill."

Papamichael used a number of custom-made lights on *Phenomenon*, including another Kincaid invention called the 'mus-ball,' which the gaffer developed while working on *Casino* with his frequent collaborator, Robert Richardson, ASC (see details in *AC* Nov. '95). "The mus-ball is a cool kind of Chinese lantern," Papamichael relates. "It's draped with muslin, which makes it nice and soft. It has strips of Duvateen that hang around it so you can really control the direction of the light. A lot of times with a lantern

Doc (Robert Duvall) finds that George (John Travolta) has suddenly become a formidable chess opponent. The scene was shot on location at the Shanghai Restaurant and Bar in Auburn, California; Papamichael took advantage of the room's high ceilings, hanging an overhead array of "custom coops" designed by gaffer Ian Kincaid.

Photos by Zade Rosenthal, courtesy of Touchstone Pictures Company.

you get spill everywhere, but the mus-ball solves that problem."

Papamichael also used some unique tools that he created himself. "I built a light that is a one foot-square box made of black showcard with a wooden frame in the back that holds a lightbulb," he says. "I usually put 216 or 250 diffusion on the front and hook it up to a hand dimmer. These units are very light and portable, and they're very small and easy to hide. They make a great 'eye light,' but you have to be really close with them; they make a nice soft light with a delicate reflection in the pupil."

A World of Light

Papamichael was born in Greece and spent his early childhood there. At the age of six, he moved to the U.S. when his father, a production designer (who had collaborated with Jules Dassin in Greece on *Never Say Sunday*), began working regularly with his first cousin, director John Cassavetes.

Papamichael eventually attended school in Munich, where he studied painting and still photography, which he loved but found too isolating and internal. He returned to America with the intention of working as a cinematographer.

"I knew there was an occupation known as director of photography, but I didn't know exactly what it entailed," he recalls. "I only knew it was what I wanted to do. I was lucky enough to have four or five filmmakers entrust me with their short films and student films." He never went to film school, learning the craft through experience on the set. He shot his first feature by the time he was 25, and has shot more than 20 features in the last seven years.

Papamichael says that he was attracted to cinematography because he loves the challenge of finding a consistent language for a project, through 10 or 12 weeks of changing conditions. He also appreciates the collaborative relationships with the director, actors, writers and crew members. He remarks, "It helps to have other eyes around you — people who love their jobs, and can bring different elements to your attention. On *Phenomenon*, I had a great crew that was 100 percent committed."

Summing up the life of a cinematographer, he muses, "You are assigned a story, your mind takes on the project for the next three or four months, and then you're done. With still photography, you are always 'on,' looking for the perfect moment. In film, you are creating an artificial world. I have to create the golden light of sunsets, or a sunlit interior. I have to create natural light, and I have to maintain it come rain or come shine!"

Not in a Blue Moon

Along those lines, *Phenomenon* offered its fair share of night exteriors, but Papamichael's approach to such scenes was a bit of a departure from conventional wisdom. He elaborates, "We did all of our night exteriors with tungsten [units] on dimmer boards, whereas most people use HMIs."

One of the units he refers to is similar to a Dino light, but has been customized to offer 64 rather than 36 1K Pars. "If we wanted to cool them down we used a ¼ blue for a moon effect," he describes. "If we were shooting in town and there were any other light sources, like streetlamps, I let them override the moon. The only time I will try to sell a 'moon look' is if I am out in a completely untouched area, such as a forest or the wilderness."

Papamichael's lighting philosophy is one that takes a naturalistic and logical approach. "You'll never see me use a backlight on someone's close-up and then add a rimlight to the other person in the reverse, even if it makes for 'beautiful' photography."

He demonstrates this doctrine in the Elkhorn Bar, where George and Doc engage in a game of chess. With his new powers, George is able to beat Doc, a chess master who never loses a match. The cinematographer has set up his camera at the back of the room in order to exploit a large window near the pair, who are positioned at a table in front of the bar. Outside the window, he has deployed an 18K Sunray fitted with warm gels. The figures are backlit in the master shot, but when Papamichael resets it for a close-up of Travolta, he resists the temptation to cheat in a backlight.

Above: ***Lace (Kyra Sedgwick) cares for a despondent George. Papamichael used just one light in the scene; placed outside the window, the unit wrapped the actors in light, creating minimal fill from the bounce off their bodies.*** **Left:** ***Papamichael surveys one of the film's lush natural settings.***

A newly enlightened George delves into the world of knowledge. Papamichael lent the scene a thoughtful, low-key ambience.

Anamorphic Metamorphosis

George's transformation occurs on the night of his 37th birthday, as he walks alone down a local street. A moment later, he experiences the phenomenon that will change his fate.

In setting up the shot, Papamichael intentionally avoided using a big source light that would backlight the street and wash out the pavement. Instead, he established pools of light motivated by the streetlamps in the shot.

"We shot the sequence in 8-perf VistaVision so we could cut in a light-flash effect, seen from George's point-of-view," Phedon says later. Explaining the filmmakers' decision to use shoot the picture in anamorphic, he notes, "At the beginning of the movie, George Malley is somewhat oblivious to the wonders around him; we wanted to show that mankind is just a small presence in this vast, wonderful world.

"After George is transformed by the phenomenon, we introduce a new photographic look," he continues. "He slowly begins to see things in a different way. The photography starts in a plain and naturalistic fashion, but as George's powers increase, the look becomes more stylized.

"For example, he's much more in sync with nature, and he begins to discover its rhythm. In one scene, George is in the foreground, and he suddenly picks up on the wind, which is causing some trees to sway in the background. In one of the shots, we push in on his back, and we can see the trees bending. We hooked the trees up to a cable and used ritter fans to simulate the wind while John swayed in sync. We *had* to use a widescreen format to capture that."

Papamichael shot *Phenomenon* with a Panavision package, including the company's E-Series anamorphic lenses. His film stocks of choice were Kodak's 5298 and 5293.

Throughout the picture, he used 4 stages of filtration:

- 81EF for a slight cooling effect;
- Straight 85 for normal correction;
- 85 plus an 81 EF for a slight warming effect;
- 85 plus a Tobacco #1 for the warmest and most magical effect.

He used the above filters in combination with an ⅛ or ¼ black ProMist for subtle softening while maintaining rich blacks.

Colorful Characters

In addition to tailoring his photography to the arc of the story, Papamichael also sought to create a stylistic progression in the color scheme of his lighting. He relates, "The picture starts with more naturalistic colors — more white light. As George becomes more aware, we introduce warmer light. A lot of scenes take place in 'golden light' or late afternoon light."

In one such scene, George walks through the forest with Lace (Kyra Sedgwick), an artisan with whom he has fallen in love. "Lace is the only person in town who understands him," Papamichael explains. "The others are intimidated by his new talents, which have drawn worldwide attention. The scenes in which the two of them are together are mostly set in nature, so we tried to be more stylized, adding a golden glow around them. We lit the forest sequence with a row of 12 big Dino lights, which read warm in daylight because they are tungsten. It was a misty overcast day, but we managed to create a sunset effect."

At one point in the story, Lace visits George's house and finds him in a distraught condition. "He's just had this 'experience' with the swaying trees, and he can't understand what's happening to him," Papamichael says. "His hair is all fuzzy, and he hasn't shaved in days. The scene takes place late in the afternoon, so it's a bit stylized; we shot much tighter and used warmer tones. I even introduced some slow motion as Lace calms George down, cuts his hair and shaves him. It's a very emotional and intimate moment."

The cinematographer adds, "What I'm trying to achieve with the lighting in this section of the movie is that George has been enlightened and 'illuminated' by his newfound awareness and powers; in turn, he illuminates the others whom he is able to reach. So all of these people are given a warm glow, and are surrounded with this different look.

The color strategy was developed by Papamichael and production designer Garreth Stover, with whom he had previously collaborated on Diane Keaton's *Unstrung Heroes* and Jon Turteltaub's *While You Were Sleeping*. "Garreth and I work closely together, assigning colors to each of the characters. I think we got a lot of that technique from Diane, who prepares every detail in advance."

Papamichael has directed two of his own features *(Dark Side of Genius* and *Sketch Artist)*, which helps him shoot effectively. "I'm always thinking about the cutting room when I'm shooting," he says. "After working through the entire process, you get the understanding that cinematography is only one element of making a film.

"Good cinematography encompasses more than light and composition; it is everything in your frame," Papamichael says. Fifty percent of the look, he explains, is the textures and surfaces and colors. "I take a lot of care dressing the background. That's why the collaboration with the production designer is so important. Garreth is a master at aging and texturing the surfaces."

Papamichael's collaboration with Turteltaub works in a much different way than his teaming with Diane Keaton. "John and I discuss a scene in the morning, do a rehearsal and design the shots right there on the spot. As we go through a day, we are cutting the scene in our heads." He adds that Turteltaub is very coverage-oriented. Having worked so often with comedy, Turteltaub will give himself lots options so that he can change the pace of the scene in the editing room and assemble it in a number of different ways. However, the cameraman notes, "*Phenomenon* is also different from *Cool Runnings* and *While You Were Sleeping*, the other films I've done with John. It's his first drama, and we set out to find more expressive, fluid shots. And with this subject matter of man's relationship to the cosmos and nature, we use lots of vertical movement motivated by the them, such as crane shots from the earth to the sky."

Connecting with Nature

To help convey George's rapidly developing awareness, Papamichael, Turteltaub and Stover developed special images to guide the viewer into a similar state. In one scene, as he makes his way to Lace's house, George comes across a huge field of wildflowers, and begins collecting some for her. Stover had to make thousands of silk flowers to cover the field, because the production was filming in the fall, when the hills are brown.

"On every shoot there is one design nightmare," Stover attests. "I explained to Phedon and John, 'We have to be very careful about how this is shot, because I can't cover the entire area!' So the greensman and I started to plant silk flowers. The soil was hard as concrete, and we had to drill holes in the ground to stick 'em in. Five guys worked for eight days, but still, it looked like hell when we were done!

"The flowers were all uniformly planted, and I realized that wildflowers don't grow that way! I went through and pulled lots of them, but it still didn't look right," Stover confesses. " Then I thought, 'Wait a minute! Weeds, we need

Turteltaub Takes New Visual Turn

Phenomenon represents the third collaboration between director Jon Turteltaub and cinematographer Phedon Papamichael, following the duo's efforts on *While You Were Sleeping* and *Cool Runnings*. For the director, however, their latest film together was a professional and personal departure from his previous shooting styles.

"The greatest challenge was the way the film was shot," he says. "For me, cinematography has always been a sacrificial lamb. In the past, I have said to Phedon, 'I don't care how it looks; I have ten more setups to do today. Good enough is good enough, let's shoot!'

"When we set out to make *Phenomenon*, though, I sat down with Phedon and said to him, "Forget about everything we've done before. I want this film to look incredible. I want people to see the film and say, 'Boy, that really looked beautiful.' For the first time in my career, I actually started toying with the idea that what I was doing might actually be art instead of just entertainment and craft. I wanted to explore the art of filmmaking. As a result, we found the time in the course of the day to make it look good. I don't think I ever once said, 'Hurry up.' Or if I did, I don't think I ever said, 'It's good enough, let's shoot' or 'I don't care, it's fine.' If Phedon said it would take an hour, I never spoke to him until the hour was up."

One influential film for Turteltaub, Papamichael and production designer Garreth Stover was *The Color Purple*, shot by Allen Daviau, ASC. All three were impressed with the picture's striking cinematography, which was enhanced by superb period production design and director Steven Spielberg's frequent use of a moving camera. The trio sought similar qualities on *Phenomenon*, despite the fact that Turteltaub's films are usually marked by the following list of shots: two over-the-shoulders, two singles and a two-shot.

"I tend to go for what's safe," the director admits with considerable candor. "But Garreth and Phedon pushed me to take a few more chances."

When asked how receptive he was to Papamichael's suggestions, the director replies, "I'm open with Phedon, because I can turn to him and say, 'Shut up, leave me alone,' without him getting into a bad mood as a result of it. Likewise, he can look at me and say, 'You're an idiot, this is better and you're ruining the movie.' I usually reply, 'Okay, fine.' I walk away and I don't care. That's one of the big advantages in working with someone regularly. You can consult each other and push each other without feeling hurt."

Of course, on any project there are always a few awkward moments when the director, cinematographer and production designer have set up a scene but find that none of their ideas are in sync. During one such moment on the set of *Phenomenon*, the three reached a compromise by attempting something none of them had ever tried before.

"There's a scene in the film in which John Travolta and Kyra Sedgwick are lying in bed," Turteltaub explains. "They were horizontal in the frame, but the pillows were in the wrong place, and it just looked weird. So we kept propping them up and their bodies were at these strange distorted angles. Then Phedon said, 'Let's do a dutch angle.' I told him he was crazy, and said, 'I don't want it to look dutched [on the screen.]'"

Papamichael manipulated the camera so that it seemed to be dutched, but in the dailies, the actors appeared to be in a normal position. "I'm sure we're not the first people to think of this, and it's probably been done before," Turteltaub says. "But we sure felt proud of ourselves.

"When I look at this film, what I see is a very rich and beautiful story, with [fantastic] photography and unbelievable performances by John Travolta and the rest of the cast. I'm proud of the steps we all took when we set out to make this movie."

—Karen Erbach

weeds!' So we put weeds between the flowers, but it still didn't look right! Then I noticed the road nearby, and started examining the plants by the road. Dirt! We needed dirt to coat the flowers. I went through the whole field and coated the silk flowers with aging spray, and at last it looked right."

Papamichael adds, "We also used ritter fans to blow pussywillows through the air, creating a special atmosphere. We interpreted the story through these subtle devices — longer lenses, backlighting and fields of wildflowers."

Style Follows Story

"The most important achievement for a cinematographer is to find the appropriate language for the script, rather than imposing your own style on the story," Papamichael says. "You have to let the story dictate the style. I always approach a story without any preconceived ideas. I like to keep things fresh. As I begin shooting, the story really tells me what to do; I start finding things. I might go in the wrong direction now and then for a scene or two, but then I think, 'This is what I need to do here.' Of course, in order to be open to trying something new, you need to have a backlog of experience from which to draw.

"For example," he says, "in the shaving scene, where Lace cuts George's hair and washes him, we used just one light. It's coming in from outside and it wraps the characters perfectly, with minimal fill provided by the bounce off of their own bodies. It just falls in the right spot. Until you get more experience, you have a tendency to use too many lights. I think light placement is the key. Experience permits you to find that special spot.

"I try to find a way to let the light wrap the actors' faces without having to use a lot of fill light. I'm not a very technical cinematographer and I don't light to 'ratios,' I light by eye. I'll bring in a fill light, wire it to a dimmer and then bring it down until it looks right to me. In general, I use one source, and I rarely use any fill. On *Phenomenon* I tried not to use any fill. My background is in still pho-

tography, so I try to find natural light and place things within it. Then I work on *creating* natural light and maintaining it throughout the day."

Papamichael notes that his lighting strategy for actors varies considerably. "It depends on a lot of things — an actor's complexion, the shape of the face and their eyes," he says. When approaching a close-up, he will set the position of a light and see how it wraps around the actor's face. "Kyra Sedgwick for example, has very deep eyes, so I tend to go frontal with her," he says. "Robert Duvall takes top-light or even half-light. I don't ordinarily use that type of lighting, but it makes him look very good and gives him a nice dramatic quality. Duvall is incredible. Once you get him into your light, you suddenly think that you're watching a classic movie!"

When shooting Travolta, Papamichael went ¾ frontal, wrapping the light around both of the actor's eyes. "I want the audience to connect with John's piercing translucent blues," the cameraman says.

"I wait as long as possible before I make these choices," he reveals. "I like to see the set, the location, the wardrobe and even the performances. I like to see how the actor is going to play the scene when he first comes out in the morning before I decide how to light; is he playing it light or is he playing it more dramatic? Is the setting dramatic and striking or is the setting more neutral?

"The movie takes on its own life, and I just have to be open-minded and flexible enough as a cinematographer to be responsive to it and go with the flow. If I get stuck on what I've attained in the past and I'm reaching back to scenarios that I've created before, I'm not going to evolve any further. That's when you've lost the passion for your work."

Run-and-Gun Style Propels *Eraser*

Director Chuck Russell and cinematographer Adam Greenberg, ASC add a daring handheld edge to Arnold Schwarzenegger's latest action epic.

by Eric Rudolph

ERASER IS THE TALE OF FEDERAL Marshall John Kruger (Arnold Schwarzenegger), a member of an elite group within the Federal Witness Protection Program whose task is to eliminate all prior traces of witnesses, and protect them from the would-be assassins threatened by their incriminating testimony. So efficient is Kruger at his work that his colleagues have nicknamed him "Eraser." Kruger's mettle, however, is put to the test when he is assigned to a witness endangered by an enemy with skills as formidable as his own.

During the mission, a double-cross ensues and Kruger is branded a traitor. Having failed to prove his innocence to his former mentor, Samaritan (James Caan), and his superior, Beller (James Coburn), Kruger soon becomes a fugitive. His sole goal is to protect the life of Lee Cullen (Vanessa Williams), a woman with information that could expose a government conspiracy and shift the balance of world power to terrorist groups. The conspirators, of course, want Cullen eliminated.

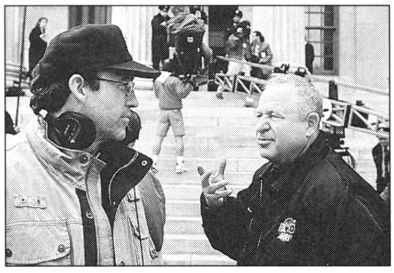
This mega-budget thriller had been slated for the requisite anamorphic wide-screen treatment, but cinematographer Adam Greenberg, ASC decided "to have some fun," and shot about half the film in an energetic handheld style with the Aaton 35-III. The 35mm sync-sound camera, which weighs some 16 pounds and has a 400' displacement type magazine and onboard battery, is a bit larger and heavier than the average 16mm production camera, but it is still quite light and maneuverable.

Greenberg enlisted the aid of the Aaton 35-III to involve the audience more closely in the action, and to break away from the standard anamorphic action-movie look. "I'd done movies before with Arnold Schwarzenegger (*Terminator* and *Terminator 2: Judgment Day*) and I thought it would be interesting to shoot a lot of *Eraser* with a handheld camera. I wanted the freedom to move the camera easily with the actors to dramatize the story. I didn't want to use the Steadicam, because it has such a 'ghostly' look.

"The moment I picked up the Aaton, which is so small and light, I knew I'd found the answer. On a lot of anamorphic features, the camera doesn't move much, and it certainly isn't handheld very often; as a result, those movies can look heavy and static. At first, my camera crew didn't want to touch the Aaton, but later they didn't want to do a handheld shot without it. The magazine was a little tricky at first; it doesn't have the standard [film] path, but we had no serious problems once we got used to it."

Photos by Bruce McBroom, courtesy of Warner Bros.

Arnold in action on a blazing set.



Above: ***A crane-mounted camera platform is used to angle in on*** **Eraser's** ***hero as he wends his way through a fiery dilemma.*** **Right:** ***Russell (left) confers with Greenberg on location.***

Eraser's director/executive producer, Chuck Russell (*The Mask*, 1988's *The Blob*, *Nightmare on Elm Street 3*) was committed to the extensive use of the small, maneuverable camera from the start. "The Aaton is the one device I wanted to push as hard as I could, and Adam loved the idea," says the director. "The cumulative effect is that the look is more exciting, but it is not distracting. We used a minimum of Steadicam; we always tried to come up with a device to continue with an edgier handheld feeling. There's something about the smoothed-out movement that a Steadicam creates that tells me, storywise, that everything is okay. It's great when used in the right places in a picture. The problem arises when the scene isn't right for Steadicam, yet you really want to move the camera fast, and you can't do it in a normal handheld way without the camera bouncing all over the set."

To solve that problem, Greenberg took the seemingly contradictory step of placing his Aaton camera and its operator on a dolly for many fast-moving handheld shots. "Using a dolly to move a handheld camera gives a smoother look. However, the operator still has the freedom to adjust his body to the way he feels, and the camera is not solidly locked to a track. I insisted on doing those types of moving shots handheld, to enable us to be right there with the actors all the time. I wanted more energy in the look of this film. People tend to go to the convenient way of doing things; it's human nature, and if you don't insist on something different, you'll always get the conventional approach."

Adds director Russell, "You're always suggesting something through your use of the camera; it creates subtext. If I wanted to race around with a handheld camera, it would be too rough, to the point where it would look like documentary war footage, and that [kind of shooting] can take you out of the moment. Adam came up with a couple of techniques that allowed us to have an exciting handheld look without taking it to the point of distraction, such as using the dolly to smooth out fast handheld shots. He also used a weirdo skateboard platform that was an inch or two off the ground and could race along the floor. We used that to great effect in a scene where Arnold is running through the halls of a high-tech security facility, and Plexiglas barriers are slamming down all around him. With the rigs they devised, we could run at full speed, with the operator, Mike St. Hillaire, lying on his back. He was doing everything but standing on his head on *Eraser*."

The Aaton 35-III found its way into Greenberg's hands, and onto the set of the summer actioner, via an unusual route. "Adam heard that we had the Aaton 35-III when he was scheduled to shoot some Snapple commercials in New York," says rental manager Ian McCausland of Abel Cine Tech, the exclusive East Coast representative for the Aaton 35-III. "He wanted a light 35mm camera that would allow him to run and gun. He used it for the commercials and got the idea to use it on *Eraser*. The only thing we had to do was to add an anamorphic screen and the Panavision hard front, so the older C-series Panatar anamorphic primes he wanted to use would fit. We also customized the grips, removing the carved walnut grip and installed a custom-made set of foam-covered two-sided grips with an on/off switch. The custom grips re-aligned the balance so Adam and his operator could hold the camera further out front, which was a better balance for them."

According to Phil Radin of Panavision Tarzana, it was necessary to re-engineer the barrels of the 1960s-era C series anamorphic lenses (which range from 30mm to 180mm) because "the Aaton has a knuckle that extends out to the front of the camera from the viewing system, and it was bumping into the housing of our lenses." The older lenses were used because "the C-series are the only Panavision anamorphic lenses that will work on the Aaton, primarily because they are small enough and light enough. With C-series lenses, the Aaton can be used for its intended purpose, which is clearly handheld photography.

"Of course, the Aaton 35-III is not really a sync-sound camera in the conventional sense; it is not a studio-quiet camera," adds Radin. "It's still a little bit noisy,

Top to bottom: ***Digital tools were used to achieve a final composite (bottom) of a helicopter interior against a nighttime cityscape. The actors were in the 'copter were shot against greenscreen (top), and the skyline (center) was added in later (compressed images from film clips).*** **Far right:** ***Schwarzenegger and co-star Vanessa Williams elude the bad guys.***

Composite clips courtesy of Pacific Title Digital.

but with an action movie it doesn't matter; you normally cannot use a lot of the sync dialogue tracks anyway, due to noises from wind machines, or the noise made by rocking an airplane set up and down mechanically." (Aaton says the 35-III's noise level is 33 dB measured at one meter from the lens front; a Platinum Panaflex produces 20 dBs of sound.)

Greenberg says that he had "no special problems" shooting half of a major anamorphic feature handheld with the Aaton, and encountered no image stability problems. (The Aaton 35-III's lightweight design dictated the lack of a pin-registration system; however, Aaton claims that its co-planar claw-movement system assures image steadiness to 1/2,000 of image dimension.)

Greenberg's experience shooting handheld action footage began in Israel shortly after World War II. Raised in a Polish film-business family, his hands-on introduction to motion pictures came through newsreels. "I started in a black-and-white lab in Israel, going to school part-time and developing and timing 35mm newsreel footage. I was shooting stills in my spare time, rolls and rolls of 35mm black-and-white, because it was cheap. I was processing it at the lab at no cost and spending hours and hours shooting and printing. One day there was an emergency: some VIP was arriving at the airport, and there was no one available to shoot the newsreel footage, so they let me go. For several years after that I shot newsreels — and then dozens of documentaries and features — in a handheld style," he recalls.

Director Russell says that he was eager to work with Greenberg on *Eraser* for a variety of reasons. "I had been looking to work with Adam," says Russell. "I'd always admired his work, which I thought was rich and beautiful. For *Eraser* we wanted something dark and exciting, and possibly a little less slick and controlled than most action pictures. I didn't know if Adam would be excited about doing a lot of handheld work and using some other edgier techniques, but as it turned out, he had been looking to try something in this style.

"I judge cinematography by night exterior lighting more than anything else," Russell adds. "Adam's night work has always had an exotic, dangerous, and glamorous look, but it's always been believable; I never see the lights just outside of the frame line. Adam's special gift is that he can take his work to the limit, where it has glamour without looking overlit or overly careful. His work always has a hyper-reality to it without getting too stylized. As a viewer, I'm then able to relax and step into that world, and stay there. I'm always interested in trying to push that border between the realistic and the fantastic.

"Our overall approach to shooting this film was that if the shot itself didn't have some energy, we didn't want to do it. I wanted Adam to go further along in the directions he had explored with his previous films, especially in terms of the night work. When you combine that style with the energy that [a star like] Arnold can bring to the screen, you've got something special."

Greenberg's prior experience working with the actor was an added plus for the director. "Whenever a film star like Arnold Schwarzenegger goes into a picture knowing for certain that the cinematographer can make him look good, there's a comfort level that is hard to come by otherwise," says Russell.

Having now shot the action mega-star on three features, Greenberg has developed some definitive ideas on how best to light him. "I like to always use his great chin- and cheekbones," the cinematographer says. "He is great with hard light, which emphasizes those features. I like to use low camera angles and wide-angle lenses with Arnold, as well as very long lenses. I don't think he looks his best onscreen with lenses in the 'normal' range. I like to go very wide, such as an 18mm, from a low angle. A 200mm or 400mm also works well with him. On *Eraser* we mostly used the 40mm and 180mm. We actually did a lot of handheld shots with the 180mm."

Greenberg adds that he dislikes using zoom lenses because they lack the crisp, dimensional feeling he prefers for his photography. (The Panavision C series' 40mm and 180mm lenses are both T2.8 lenses. There is also a 1.4 ex-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tender for the 180mm, which makes it a 252mm T4.)

The cinematographer used a wide range of Kodak stocks on *Eraser*. "All of the night exteriors were 5298; day interiors were 5293, and we used some 5248 for day exteriors," says Greenberg. "But there were very few day exteriors, as most of the film takes place at night." Most of the VistaVision background plates were also shot on 98. "5298 is a great stock; it makes the cameraman's life easy. Anyone can be a great cameraman with 5298!" he jokes.

Greenberg may be modest, but he certainly made the most of the technology at his disposal on *Eraser*. He recalls that the small and highly maneuverable Aaton was crucial to the filming of a climactic standoff between Kruger and Samaritan, staged in the cabin of a mammoth FBI communications jet in mid-flight. Surrounded by Samaritan's cronies, the unarmed Kruger has nowhere to go — except down. In one swift move, he bounds to the door, kicks it out and leaps onto the wing, where he hangs on for dear life in the turbulent upper atmosphere.

"All of the footage of the actual plane while it was flying was shot with the Aaton, and it was a good scene for that camera," Greenberg recalls. "I wanted the audience to feel as if they were in the plane, right next to the open door with the wind roaring past them. The Aaton allowed me to capture that feeling."

Russell says that he was going for "a real gunslinger moment" with that scene. "The fun and the challenge of a moment like that is in trying pull off a standoff situation where your hero's completely unarmed, make it tense and exciting, and still give the audience a believable resolution?' I don't want to give the scene away, but it involved everything I've ever done in terms of optical effects. Schwarzenegger ends up hanging off the wing of the Boeing 727, which has a blown engine that's erupting in flames a few yards away. The sequence involved intense use of the Aaton, as well as CGI, greenscreen, wire rigs and a recreation of the side of the airplane mounted 70 feet in the air."

The scenes of Kruger's rather abrupt deplaning involved shooting Schwarzenegger jumping repeatedly from a 60'-high platform backed by a greenscreen. Greenberg built a semi-circle of 50'-high white cloth screens, and loaded five 55' scissorlifts with six to eight 10Ks each. He aimed the lights into the screens to create a general, diffused illumination for the hurtling Schwarzenegger and the greenscreen.

"When he falls, you have the natural look of the skylight, as if he is in the sky," Greenberg explains. "The scene takes place in the late afternoon, so to add the late sunlight, I put in two 20Ks. It was a very complicated shot that we did on the big Warner Bros. stage. Of course, we only got a second or two of film from each jump! But by combining these shots with the many other shots, hopefully it will look as if it really happened."

For Russell, the Aaton was such a key element in the look of the film that its influence extended to effects footage as well. "We were trying to create a level of tension and excitement and a rougher look for *Eraser*, and the Aaton helped us to do that. I tried to create our optical elements with Adam using the same technique. When people spend a lot of money and time on optical effects, they tend to make them a little too pristine. To counter that, I tried to design many of our optical effects shots with that same handheld feeling; we tried to work in some rough edges with the camerawork to lend a 'shaky-cam' feel to some of our higher-end computer graphics. It is quite a bit more difficult and expensive to marry a CG image to a shaky camera shot; it is something that has to be done very carefully in post."

An action sequence in which Kruger and Cullen are chased through the reptile house of a New York City zoo also involved various sorts of state-of-the-art cinematic trickery and creative lighting solutions. "The original screenplay had a second act shootout that I felt didn't offer anything special," Russell relates. "This film wasn't originally written for Arnold, so I wanted to add things that would make it a true Schwarzenegger picture. So we thought, 'What if this shootout took place in the reptile house of a New York City zoo?' We had real crocodiles, animatronic crocodiles and CGI crocs. The trainers warned us that the real crocs might attack the robo crocs! Needless to say, it was a very carefully shot sequence. KNB Effects did the robotic crocs, and Steve Williams at Industrial Light & Magic, who did *The Mask* with me and is one of the most brilliant CGI artists going, did the CGI crocs."

Greenberg recalls, "We only got one shot with the real crocodile." Most of the scene was shot on a Warner Bros. soundstage; only a few exterior shots were actually filmed in New York.

As Greenberg has long favored hard lighting, he wanted to make sure there was as little spill as possible in the zoo scenes. This was particularly problematic, as these scenes were designed to have a great deal of contrast; Greenberg wanted to shoot the sequence so that all sorts of scary surprises would suddenly pop out of the surrounding shadows.

"With movie lights, as much as you try to control them, they spread the light around, and it is difficult to get well-defined edges. So I used theatrical lights, which have condensers, and there was no spill; they are very controllable lights. We got exactly the look I wanted, which was pools of light and dark with lots of shadows. I wanted the actors to be hot when they were in the light, but I also wanted to just barely be able to see them when they were in shadow. I lit the set once, in a very spotty and harsh style, and we made very few lighting changes. We ended up with a 1:5 ratio between dark and light [areas] in those scenes."

Adds Greenberg, "I like effective lighting that tells the story. My feelings tell me what to do, how to light, and what I want to achieve in a scene. I like strong colors, and I like to mix and contrast warm and cold light within a scene." He cites the example of the aforementioned airplane confrontation, noting that "the light inside the plane is cold and blue, but as soon as Arnold steps outside the plane, the light is much warmer, like late afternoon light."

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Pictured on location for Spelling Productions' "Season in Purgatory" are from left to right Warner Wacha, 2nd AC, Rob Robinson, 1st AC, and Paul Varrieur, operator.

biting action sequences, the production team of *Eraser* employed the classical technique of rear projection instead of digital or greenscreen work. Notes Russell, "It's a lot easier and cheaper to do handheld process work when your principals are tied into a background plate. Using greenscreen, it becomes more difficult and expensive to match the computer material to a viscerally moving camera, so when you shoot greenscreen the tendency is to use a much steadier camera. That was definitely not the style we wanted on *Eraser*."

Adds the cinematographer, "With rear projection I can control [the look;] with greenscreen it is out of my hands. If I use rear projection instead of greenscreen, I have the tremendous advantage of being able to see the complete shot the next day in dailies. Also, I'm not stuck with a computer artist who may be quite talented, but who may not necessarily be a filmmaker. Rear projection is also a lot less expensive.

"In *T2* all of the action scenes and car chases involving the lead actors were rear projection. We did that for many different reasons, including cast safety. The producers wanted most of *Eraser*'s big action scenes to be greenscreen. I convinced them that there was no way I could have the same freedom of camera movement, which had become quite crucial to the look of the picture. It was tough to convince them in the beginning, but when they saw the results they were very happy. Using rear projection, we can easily run three cameras with total freedom, and see the results the next day."

Greenberg even prefers rear projection to location work. A major action scene involving a fight on the top of a container ship had been scheduled by the producers to be shot on location, but Greenberg convinced them to use rear projection. The cinematographer maintains that the basic techniques of rear projection are fairly simple. "If you have the lighting concept set from the beginning, you're in good shape. Of course, the basic thing is to keep the screen dark; if you have light on the screen, you're dead."

To get realistic rear-projection effects, Greenberg uses "the same elements I would use if I were on location. We had limitations on the rear projection stage in using explosions and smoke. We used three handheld cameras at once to pick up close-up and medium shots. Each camera was telling a different part of the story."

Greenberg, however, is no stranger to multiple-camera shoots. "On *Toys* we used as many as 16 cameras. On *Eraser* we used as many as seven. You get so many more cuts with multiple cameras, because they allow you to pick up isolated elements. With one of the cameras you'll see only a hand, with another maybe only a face, and with a third camera, a leg; this works well for me, because I have a good understanding of editing."

Aside from the narrative benefits, Greenberg appreciates the practicality of multiple cameras on stunt- and effects-laden pictures. "Multiple cameras are especially important with effects, explosions and action, which are so time-consuming. Everything goes once, and with multiple cameras you get seven reasonable shots. One or two shots may not be so good, but then you still have five. If I don't set up many cameras for these types of scenes, the production will not let me do the shot again. An explosion takes an hour to set up, so realistically the only way is to go is with many cameras. So in addition to the Aaton, we used Panaflexes, Arriflexes, and almost every other type of camera on certain shots."

Unlike some directors, Chuck Russell is quite comfortable with multiple cameras. "The oddest long-lens shot can sometimes be more exciting than the most carefully placed single-camera shot in an action sequence," Russell says. "There's a sense of immediacy that you can get with carefully chosen second- or third-camera shots. The obvious problem when you're shooting interiors and dialogue scenes with multiple cameras is that it's more limiting; if you have to light for more than one camera, you may not be able to get something as special. However, we went for additional coverage on exterior night scenes and stunts, and some of it was pretty wild." ☙

Global Village Idiot

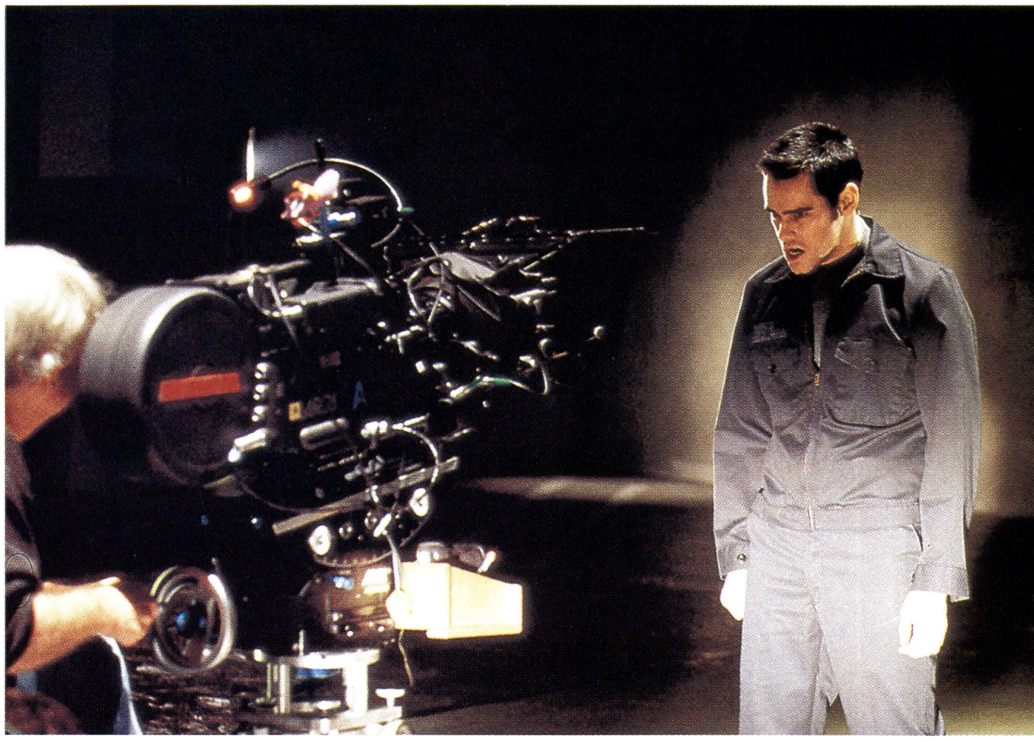
Director Ben Stiller and cinematographer Robert Brinkmann install Jim Carrey in a satiric thriller with a distinctive look.

by Michael X. Ferraro

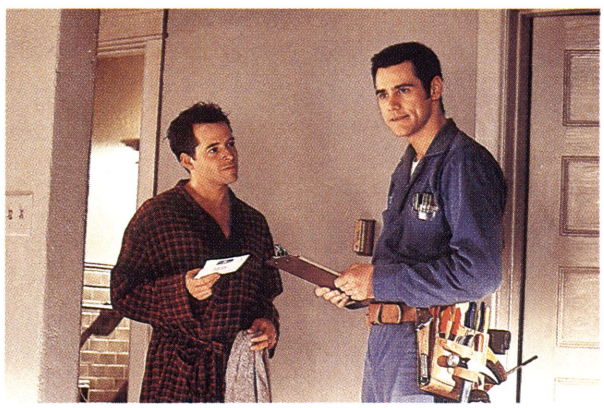
To many cinematographers, shooting a comedy film starring Jim Carrey might not sound like a major technical stretch. But such scoffers are in for a surprise when they slink surreptitiously into line (along with the rest of America) to buy a ticket to the popular funnyman's latest vehicle, *The Cable Guy*.

Described by director Ben Stiller as a "satiric thriller," *The Cable Guy* is a postmodern hybrid that allowed him and director of photography, Robert Brinkmann to flex their cinematic chops. "This is not a parody, but it *is* a comedy," says the 30-year-old Stiller. "We've all seen thriller after thriller at the movies, and this one rides the line between making fun of those films and *being* one of those films. It's about obsession, co-dependency and the incredible influence that TV and the movies have had on my generation."

Who better to tackle such subject matter than Stiller, the son of the beloved TV comedy team of Jerry Stiller and Anne Meara? After less than a year at UCLA's theater school, Stiller decided to break into the business. Following a brief stint as a cast member on *Saturday Night Live*, Stiller landed his own show on MTV. That leg up led to an obscure (but legendary) one-year run on the Fox network for *The Ben Stiller Show*, a media-savvy program which thrived on cross-referential parodies.



Photos by Melinda Sue Gordon, courtesy of Columbia/TriStar Motion Picture Companies.



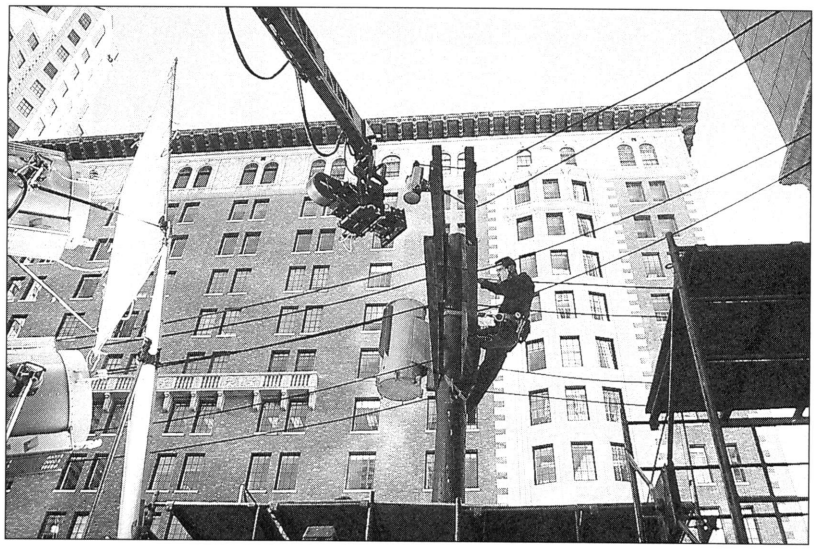
Using that experience as a springboard, Stiller moved on to direct his first feature, 1994's "Generation X" comedy *Reality Bites*. While searching for a sophomore project, Stiller initially passed on *The Cable Guy*, but he reconsidered when Carrey was cast. Joining them for the ride was writer Judd Apatow (an alumnus of *The Ben Stiller Show*, and scribe of the recent comedy *Celtic Pride*) and cinematographer Brinkmann. "We were all totally in sync in terms of what we wanted to do with this," Stiller says. "We knew that we wanted to take it 'out there,' and make it very dark. But the story still serves Jim, and what he does best. There are a number of comic setpieces in which he delivers [his trademark comic shtick.]"

In a plotline that Stiller considers somewhat reminiscent of *Cape Fear* and *Fatal Attraction*, Carrey plays "Chip" Douglas, a.k.a. "the cable guy" — a pathetic, overbearing lout who assumes he's found a best friend in lovelorn Steven Kovacs (Matthew Broderick) after giving him free access to cable television. In increasingly disturbing ways, Chip insinuates himself into Kovacs' life, refusing to let go.

Initially, Stiller had not wanted to hire a cinematographer whose forte was comedy. With a resumé that includes *Encino Man*, *The Beverly Hillbillies*, and *The Truth About Cats and Dogs*, Brinkmann fits that description; but like most directors of photography, he wants to avoid being typecast. "*Encino Man* was successful, so I started

Above: *An ominously lit Jim Carrey gives the camera a comic-psychotic glare.* The Cable Guy *uses a moody, Gothic lighting scheme to spoof the look of thrillers and horror movies. For scenes in the apartment of Matthew Broderick's character (bottom left), director Stiller and cinematographer Brinkmann created some savvy homages to Roman Polanski's classic 1965 shocker* Repulsion.

Right: ***A crane-mounted camera captures the cable guy in action atop a telephone pole.*** **Lower right:** ***Brinkmann contemplates a comedic setup.***



getting a lot of comedy scripts," says the native of Berlin, Germany. "But I definitely want to shoot other things besides comedies. I think maybe Ben was somewhat resistant in the beginning, so I had to convince him that I'm not [strictly a comedy cinematographer,] and don't want to be one. Our sensibilities are very much alike."

Longtime Stiller production designer Sharon Seymour, who had worked with Brinkmann on *The Truth About Cats and Dogs*, helped the cinematographer get a foot in the door. Stiller was also impressed with Brinkmann's black-and-white photography on the rockumentary *U2: Rattle and Hum*.

"I sat down with Robert after he read the script, and he totally understood what I wanted to do with it," Stiller relates. "Also, I needed someone who was young and could make the setups, which is really what you have to do on a comedy — you've got to get the coverage so you can have options when you're cutting. It helped that we hit it off personally; picking a director of photography is a huge decision."

So too was determining the look of *The Cable Guy*, which the filmmakers agree is almost gothic. "This was a new experience for Jim Carrey," says Brinkmann. "Even though it was a comedy, we approached it from a completely different angle. We didn't approach it visually as a comedy at all. From the very beginning we got visual

references from films that were not comedies; a lot came from the horror genre. That was more the direction we wanted to take it in."

Indeed, a trio of Roman Polanski frightfests (*Repulsion*, *The Tenant* and *Rosemary's Baby*) heads the list of inspirational films that Stiller and Brinkmann watched on laserdisc at the director's home during preproduction. Other titles on the mostly comedy-free roster include *Shock Corridor*, *Cape Fear*, *The Fuller Brush Man*, *Barton Fink* and *The War of the Roses*. "From the beginning, Ben wanted to make the film very dark and intense rather than silly," Brinkmann testifies.

Stiller concurs, stressing the importance of "a Polanski feel. We had originally planned this whole dream sequence that was a lot like the scene in *Repulsion* where the hands come out of the wall and grab Catherine Deneuve. In our version, 50 of Jim's faces were going to pop out of the sides of the wall, terrorizing Matthew, but in the end we had to cut the sequence because it would have cost too much."

Although Gilbert Taylor, BSC photographed Polanski's 1965 classic in black-and-white, Brinkmann says that the filmmakers strove to capture the feel of *Repulsion*'s lighting and sets. "For instance," says Brinkmann, "the apartment Matthew moves into is a central character in the film. There are a lot of shadows, and we tried to achieve some noir-style contrast. We also did a lot with colors. We wanted to give the film a coherent visual design, color-wise; the colors had an influence on [both the characters and the settings.]"

Kovacs' apartment is rife with monochromatic blues and grays, lending what the director describes as "a little bit of a spooky feel."

Brinkmann elaborates, "The whole film is pretty much kept in blues and greens, with a very cold look. Part of that ties into the TV light, because the TV is also a central character in the film. So the cable guy himself is frequently in a very cold environment. When we we were shooting scenes with Leslie Mann, who plays Matthew's girlfriend, we used warmer lights, warmer sets, and also longer lenses to make things much more pleasing and homey."

To maximize this austere motif, the filmmakers shot *The Cable Guy* in Super 35. "We looked at a lot of those widescreen movies from the early Sixties," Stiller says. "I just love the composition of horror movies like *The Haunting*, so we tried to go for that look a lot in the apartment. I'm very happy with how all of that stuff came out. We shot with 24 and 28mm lenses a lot of the time, trying to get as much deep focus as possible."

Often, that perspective would stem from the fact that Carrey's character was on the outside, trying relentlessly to wire himself into Steven's world. "A lot of things take place in the hallway [outside of Steven's apartment,]" says Brinkmann. "We looked at all of the shots of the hallway in *Repulsion*. We even designed our sequences with that in mind. Throughout the script, you see the line, 'Cable guy at door, trying to get in...'"

Brinkmann used Zeiss lenses procured from Otto Nemenz on an Arriflex 535; a MovieCam served as the second camera. "The

advantage [with the MovieCam] is that you can use it handheld, build it into Steadicam mode, or use it in studio mode," he points out. "It's so versatile, we could use it for whatever we needed to do."

A self-proclaimed "fan" of Kodak's 5248 stock, Brinkmann points out that the film's "gigantic night exteriors" required him to shoot with 5298 as well. "In this movie, the camera is always moving. That, of course, puts more pressure on lighting. We joked that a tripod on this movie was a dolly on an 8' by 8' dance floor, because that's as static as it ever got."

With the cable guy lurking at every turn, the filmmakers constantly sought ways maximize the comic threat. "We lit things very ominously," says Brinkmann, "and took a very low-key approach. There are shots of him in silhouette, and shots in which he looks very menacing. But in a film like this — and especially with someone like Jim, who works with his face so much — you have to strike a balance, because you also have to be able to see [the lead actor's] face."

Initially, there may have been a shadow of concern regarding Carrey's interaction with what Brinkmann describes as "dramatic camera movement," but the star quickly proved that as a student of cinema, he is neither dumb nor dumber. "We did a lot of handheld work, and I think that the increased use of camera movement was a relatively new experience for Jim," says Brinkmann. "But he really trusted Ben, and as a performer, he's really, really good at dealing with the camera. He knows exactly what to do, and knows exactly what the effect will be like on the audience. He utilizes all of his physical attributes, and he'll play them so that they read to camera."

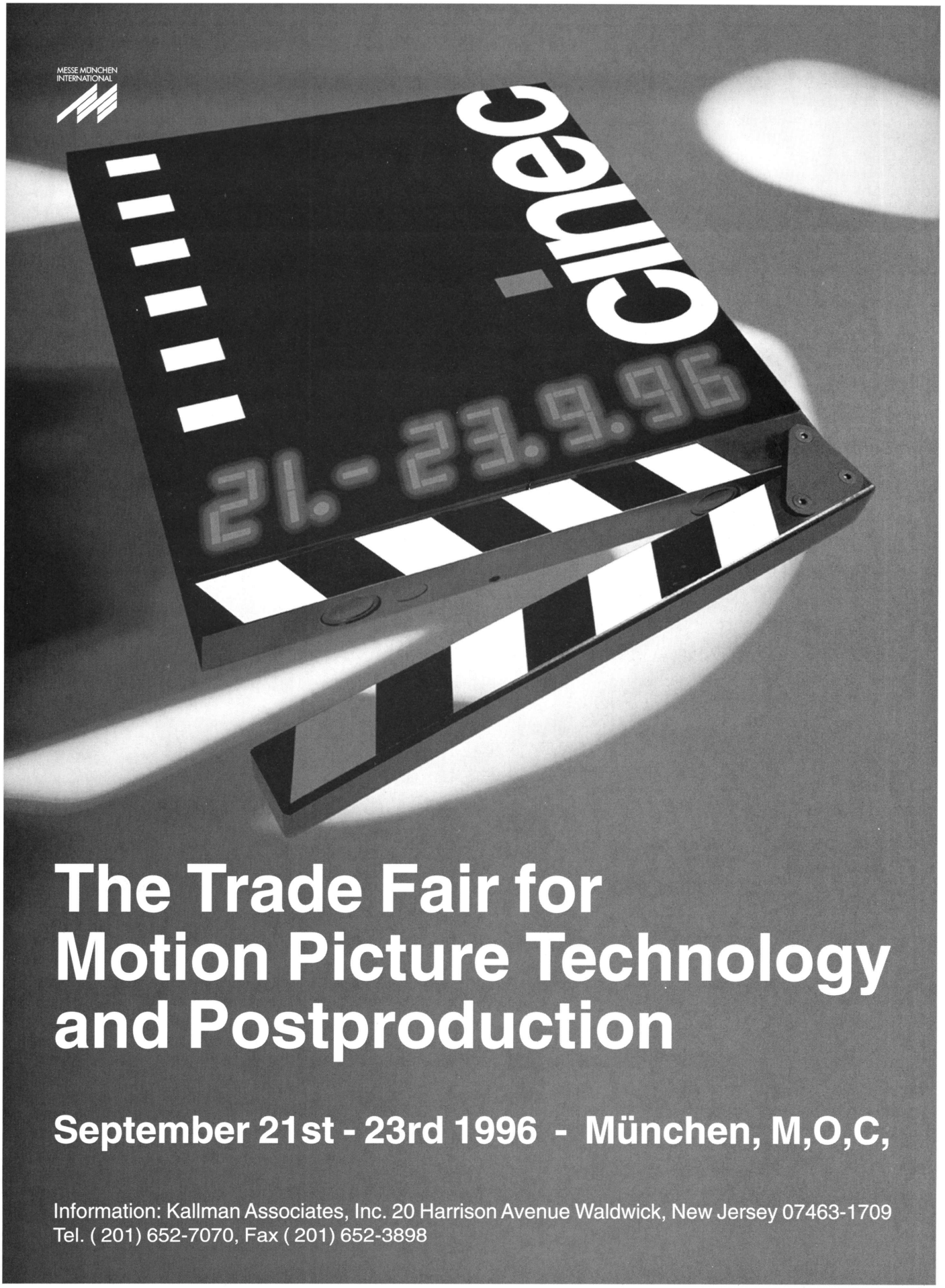
However, Brinkmann recalls one stylized scene that required the filmmakers to rein in Carrey's improvisational tendencies a bit. "We were doing a split-diopter shot with really extreme composition," Brinkmann explains. "As Jim installs the cable, his face is very large in the foreground, and Matthew is in the background. Jim, who is used to a physical style of comedy, was trying to react to Matthew, and he kept moving around. He was going across the line of this split diopter, which looked really terrible; he had never really done that type of shot before. But Ben brought him over to the monitor and showed him on video playback where the line was and what was happening when he crossed the diopter line. The minute Jim saw it, he understood, and he never did it again. In the end, it worked out perfectly; Jim just performed inside that part of the frame."

The film's spiritual centerpiece is a satellite dish 60 feet in diameter and 50 feet off the ground, which stands next to a 120-foot radio tower. Built by the film's construction crew in California's Angeles Forest, the dish serves as the cable guy's private retreat, and is the backdrop for a climactic sequence that Stiller likens to the nailbiting Mount Rushmore finale of *North by Northwest*.

"We had to design lighting that fit into the actual structures," says Brinkmann. "My gaffer, Ray Peschke, and I got involved in the design of the sets. Fortunately, we had a really good relationship with Sharon [Seymour, the production designer.] She approached us early on when she was thinking of these things: 'What do you want to do, what kind of lights do you want to have, and what can we do to build them in there?'

"So Ray came up with Par heads that we wanted built into the set. The perimeter lights were ours, but the [production design crew] built housings for them. And with the dish and tower, they were aware of what we wanted to rig. We all cooperated; when their engineers were putting it together, our pre-rig crew was cabling it up and bolting in lights in the spots we had talked about."

Brinkmann finds the skills of his veteran crew indispensable. In addition to Peschke, his core group on *The Cable Guy* included other familiar faces: key grip Joey Dianda, first AC Alex Leyton, and second AC Tom Vandermillen. Brinkmann also had words of praise for first operator Michael Scott and Steadicam operator Kirk Gardner. →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"What's great about this crew is that I've worked with all of them for many years, and we're all friends," he says. "We know so much about each other's jobs and personalities that a lot of things can be anticipated in advance. When I'm considering a job, I sometimes base my decision on whether I can keep these guys together, because making a movie with them takes half the headache away."

The success of the large night exterior shots, which are frequently streaked with artificial rain, depended greatly on the grips' deft rigging of Condors and other lighting units. "That's where Joey was really helpful," the cinematographer says. "He rigged a lot of these Condors permanently with diffusion and lights. It was like having lights that moved by themselves. We had all these big lights, but all it took to have it lit and in the proper position was one guy pressing a few buttons.

"One of my favorite lights to use is the RayBeam, invented by my gaffer — hence the name. Each unit has 30 1K Par globes placed very close to each other, so it's like having three 10Ks in one light. We used those all over the place, because they have a lot of throw. At one point we used them to light up a whole mountainside."

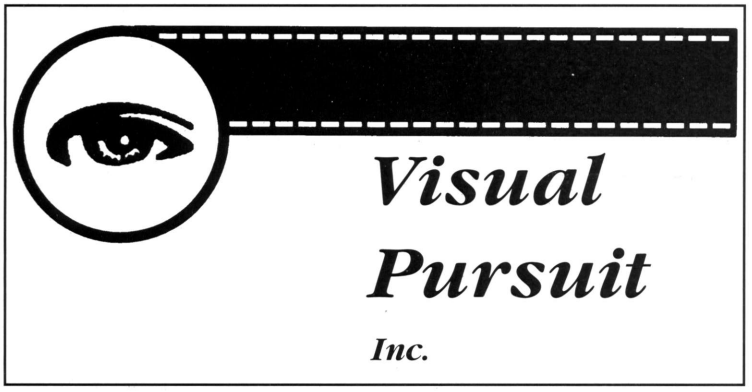
The cinematographer says that he was very impressed with Stiller's dramatic and technical abilities. "On one hand, he was able to direct Jim Carrey, who's one of the biggest box-office stars there is right now," Brinkmann points out. "And on the other hand, he could turn around and be very technical and really get into the cameras. I think it's something he enjoys; he might even be a frustrated cameraman. He loved it when I would suggest equipment or come up with an idea on how to do things technically.

"For example, when we re-built the satellite dish in the Spruce Goose hangar [in Long Beach] we needed a way to move the camera around, because the dish was curved. We could have built platforms, and put a dolly in there, but that would have taken a long time, and we wouldn't really have been able to follow the curvature of the dish. Steadicam was out of the question, because it was raining and the sides of the dish were really slippery. Instead, we got a Titan crane, and we put a Technocrane on top of it. The Titan crane would crane up and place the Techno at the side of the dish, or sometimes we took some panels out of the dish [and inserted the Technocrane] into it. With the Technocrane on top of the Titan, we could arm around and telescope, and really go anywhere we wanted to go. At one of our preproduction meetings, we had discussed how we would get around and make moves. I couldn't see any other way to do it; we thought about hoisting a big construction crane up there, but it just wouldn't have worked. When we talked about the Technocrane, Ben immediately jumped on the idea, and we wound up shooting a lot of scenes that way."

Stiller also had some concerns regarding the large number of setups on location at Medieval Times, a large theme restaurant where the cable guy hopes to engage in some male bonding with Kovacs. The duo eventually end up being part of the evening's dinner entertainment as they engage in a slapstick duel with a variety of medieval weapons. Approximately 180 camera setups had to be performed over four days of filming at the restaurant. The filmmakers met the schedule, however, thanks to two weeks of rehearsal and some flexible lighting schemes. Say Stiller, "We choreographed the fight in advance, so two months in, when we got around to shooting it, we knew exactly what it was going to involve. Jim came up with all of these ideas during the rehearsal, which was great; we didn't want him coming up with that stuff on the day we were shooting, because we wouldn't have had time to set it up."

To light the restaurant, Brinkmann used "a combination of practicals and our own space lighting all tied together in a dimmer board. We designed the lighting so it could turn every which way; all it would require was moving around some follow spots and ground units."

Another challenge was presented by one of Stiller's favor-



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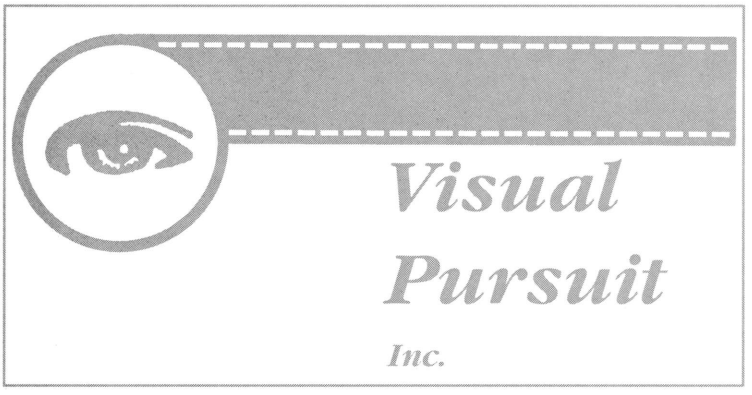

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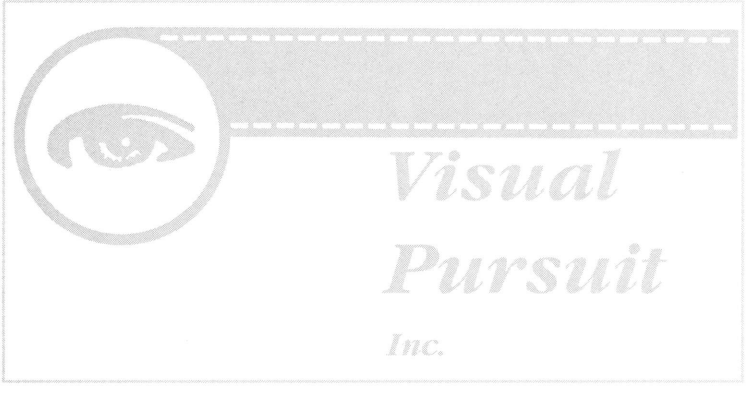

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ite sequences — a pickup basketball game that's thrown into chaos when the cable guy shows up and invites himself onto the court. In one shot, the camera had to tilt up to the ceiling, a move that would reveal the lighting rigs above. But Brinkmann says that key grip Dianda "hung all these coops up, and rigged them so neatly, with all of the cables and wires wrapped tightly, that even though they're actually in the shot, they look as if they're part of the building."

However, their approach to meticulous choreography, exemplified by the Medieval Times and basketball scenes, was abandoned when the crew set up to capture the free-flowing vibe of a "karaoke jam" thrown by the cable guy at his apartment. "The scene becomes like a musical," Stiller explains. "Jim is singing [Jefferson Airplane's] 'Somebody to Love,' this acid-trip song from the Sixties, while Matthew is being seduced by a prostitute in another room. We did a 360-degree dolly track on Jim while he's singing, with a psychedelic karaoke ball and all of these weird people behind him. We also shot a not-quite 360-degree track on Matthew getting massaged by this woman, so we could later execute a series of dissolves between Jim and Matthew. The lighting was designed to create the idea that Jim is weaving this web of deceit and trickery. That was something we came up with on the spur of the moment."

Viewers may notice some slipshod camera work throughout *The Cable Guy*, but Brinkmann makes no apologies; in fact, he's rather proud of it, as it was designed on purpose. A running gag in the film is a fratricide trial that lampoons the television coverage of the infamous Menendez and Simpson murder trials. In this comic subplot, Stiller plays both Sam and Stan Sweet, identical twins and ex-sitcom stars. "We shot in an actual courtroom downtown," Brinkmann reports, "and mimicked a lot of camera moves from the O.J. trial. We had one video camera set up, and we would do these really awful, mechanical pans and awkward zoom-ins. Being incompetent on purpose was a lot of fun."

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The Sea Hawk Sets Sail

Warner Bros. tapped a considerable reservoir of talent — including director Michael Curtiz, star Errol Flynn and cinematographer Sol Polito, ASC — to create the definitive 1940 version of Rafael Sabatini's swashbuckling novel.

Part 1 of 2

by Rudy Behlmer

AFTER COMPLETING THE SOUND REMAKE OF *CAPTAIN Blood* in 1935, Warner Bros. decided to follow that successful venture with another Rafael Sabatini sea story starring the screen's newest swashbuckler, Errol Flynn. *The Sea Hawk* was the logical choice. By the time the film was finally produced in 1940, the Warner Studio in Burbank was an extremely well-oiled and smoothly integrated machine that was equipped with up-to-the-minute facilities and technical virtuosity. *The Sea Hawk* can be regarded as the high-water mark of epics made on a studio lot. Only a few years later, such a film automatically would be shot, at least in part, on location.

Errol Flynn christens one of the ships on the new maritime stage at Warners. Also present at the Stage 21 dedication ceremonies on February 15, 1940 were director Michael Curtiz, Flora Robson, and Brenda Marshall. (Courtesy of AMPAS.)

Almost nothing in *The Sea Hawk* was shot off the Warner Burbank lot. The palace of Philip II in Spain, an epic sea battle in the English Channel, Queen Elizabeth's 16th Century court, the Panama jungles, the Spanish galleys, the coast of Seville, Dover, and more were concocted entirely within the confines of the studio.

Various studios had produced silent film versions of Sabatini's novels. Spectacular and faithful to the book, First National's 1924 production of *The Sea Hawk,* starring Milton Sills, was the most popular of the adaptations, grossing nearly $2,000,000 — big money in those days. Warner Bros. acquired rights to "The Sea Hawk" and Sabatini's "Captain Blood" (made by Vitagraph in 1924) after the studio absorbed both First National and Vitagraph in the late 1920s.

Preliminary work on the new *Sea Hawk* proceeded slowly. On Sept. 10, 1936, Warner associate producer Harry Joe Brown wrote executive producer Hal Wallis: "I bring to your attention again *The Sea Hawk*... We have some marvelous battle scenes from the old [silent] picture. Here's hoping we go to work on it."

The sea battle and other ships-at-sea material from the 1924 *Sea Hawk* negative had been extracted and kept separately for potential use in both sound remakes. Better quality, of course, could be achieved by intercutting original negative — particularly at that time, prior to Eastman Kodak's 1937 introduction of a vastly superior duplicating negative and fine-grain [master positive] film. So until 1993-94, when UCLA and the Library of Congress jointly restored the 1924 *Sea Hawk,* only incomplete negatives and prints had been available. Ironically, no footage whatsoever from this earlier version ever made it into either the 1935 *Captain Blood* or the 1940 *Sea Hawk.*

In 1936, instead of moving ahead with production plans for *The Sea Hawk,* Warner executives decided to go with another big-budget Flynn film, *The Adventures of Robin Hood* (1938). By early 1938, Henry Blanke, the producer of *Robin Hood,* was assigned to be associate producer of *The Sea Hawk.*

On August 25, Seton I. Miller submitted a 25-page outline to Blanke called "Beggars of the Sea." It had nothing whatsoever to do with Sabatini's *Sea*

Another view of Stage 21. Note cyclorama. The "water ripple and wave illusion machine" (see detail photo on p. 88) was behind the painted ocean. (Courtesy of USC Cinema-TV Library.)

Hawk, which was about a Cornish gentleman who became a Barbary corsair. Miller devised an entirely new approach and plot dealing with the exploits of a fictional character, Geoffrey Thorpe (Flynn), suggested by Sir Francis Drake — who, along with other privateers, commanded marauding expeditions against the Spanish, taking rich booty from treasure ships and Spanish possessions in the Americas for the treasury of Queen Elizabeth. The historical backdrop Miller used was, on the whole, reasonably accurate. But curiously, the "sea beggars" of history were what Dutch privateers of the time were called; their English equivalents (Drake, Hawkins, Frobisher, etc.) were referred to as "sea dogs." Historically, there were no "sea hawks."

Miller was told to develop his outline into a script, which he completed in late 1938. Shortly afterwards, Wallis again decided to postpone work on *The Sea Hawk* for the time being. Then, on the recommendation of Warner staff writer (and soon-to-be director) John Huston, Blanke sent writer Howard Koch the latest script on "Beggars of the Sea." Koch had recently been put under contract. At this time it was agreed that all references to the "beggars of the sea" were to be dropped; instead, to ensure a saleable, sure-fire title, the privateers would be called "sea hawks." Wallis and director Michael Curtiz also decided, in Wallis' words, "to use [footage from] practically all of the fights on the two ships from [the 1935] *Captain Blood,* which will mean a tremendous saving as Mike agrees that he could not shoot a better fight today than he made at the time in *Captain Blood*." The budget was brought down to $1,161,000.

After reading Miller's material and attending the various meetings, Koch drafted a 38-page "suggested story treatment," which essentially was the same story Miller had written. In examining the various drafts, it is clear that the primary difference between Miller's scripts and Koch's scripts is in the dialogue, characterization, and interplay. Koch did rewrite a good many of the scenes in a different style, and he gave more dimension to the stereotypical characters. Formula elements from *Captain Blood* and *The Adventures of Robin Hood* were interwoven for box-office insurance. The pirate/outlaw status of Thorpe (a privateer) is presented as being justifiably motivated by injustice, tyranny, and patriotism, thereby making his position respectable.

In the summer of 1939, *The Private Lives of Elizabeth and Essex,* starring Bette Davis and Flynn, finished filming. The plan was to begin work shortly thereafter on *The Sea Hawk.* In fact, on April 5, 1939, Wallis had written to Tenny Wright, the studio production manager: "In planning your sets for *The Knight and the Lady [The Private Lives of Elizabeth and Essex,]* please plan these on stages where they can be saved after this production, as we will be able to use practically every set over again for *The Sea Hawk* and

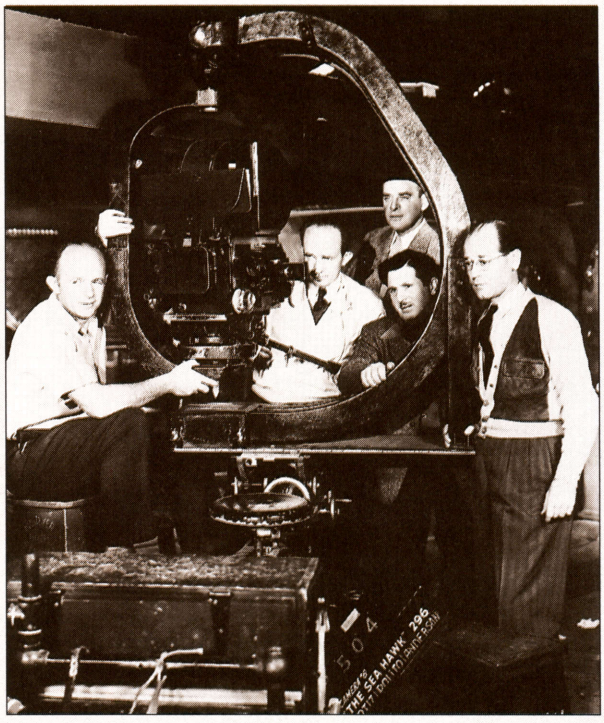
this will save a fortune."

But various circumstances caused *The Sea Hawk* to be postponed yet again for six months. The postponement allowed sufficient time for the planning and construction of a unique new "maritime" soundstage on the Warners' Burbank lot. After its completion, Stage 21 (at the time the largest and most modern in the film industry) was capable of being filled with water. Thousands of feet of heavy mains, sewers, and drains had been installed. Working in several shifts daily, 375 men were employed for 11 weeks to undertake the construction of a full-scale, 135' British man-of-war and a 165' Spanish galleass, which could be placed side by side, with some distance separating them, in the water on the stage. A pit between the two ships reached down several feet below stage level, making it possible for stuntmen to fall into the water from the decks. Elsewhere the "ocean" had a depth of only a few feet.

The ships were erected on steel platforms that, in turn, were mounted on wheels that worked on a series of tracks. Hydraulic jacks could rock the vessels. Previous to this endeavour, no ship the size of these had been built especially for stage work, either indoors or outdoors.

Surrounding the two ships, a huge, painted muslin cyclorama served as both sea and sky. Art director Anton Grot and his assistant, Leo Kuter, developed what they called a "water ripple and wave illusion machine," which created the effect of moving ocean water — from normal waves to rough seas — by sliding sheets of "wave silhouettes" up and down in front of lamps behind the lower portion of the cyclorama, painted to resemble the ocean.

This was a variation on an apparatus first designed by Kuter for *A Girl in Every Port*, made at Fox in 1928. Kuter and nautical advisor Tom Manners — both of whom had helped Fred Gabourie design the ships used at sea in the 1924 *Sea Hawk* — worked together on the remake. (The original version featured contemporary ship hulls, over which 16th-century superstructures were built. Kuter said they were "top-heavy and cumbersome." The 1940 ships were built from scratch.)

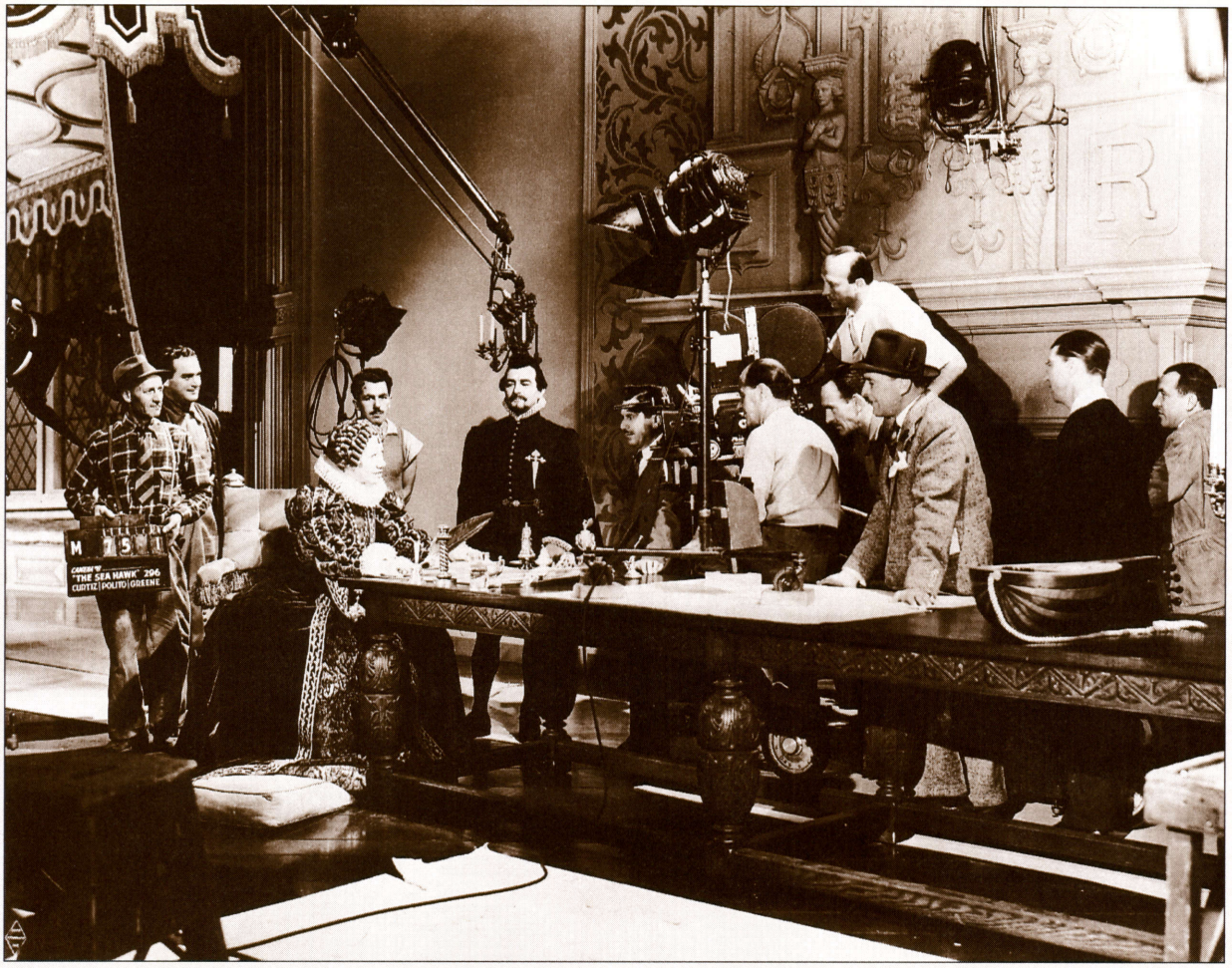


Right: ***A special camera gimbal was used to simulate ship movement at sea for certain scenes not shot on the maritime stage. Left to right: an unidentified crew member; camera operator Wesley Anderson; assistant director Jack Sullivan (standing in back); director of photography Sol Polito, ASC; and assistant cameraman Frank Evans. (Courtesy of George Eastman House.)*** **Below:** ***A behind-the-scenes view of the "water ripple and wave illusion machine." (Courtesy of AMPAS.)***

Kuter had, in his own words, "an insatiable interest in old ships," and was very much involved with those aspects of the 1940 film. The ship scenes for the 1935 *Captain Blood* also had been shot on a Warners soundstage, but only portions of the ships were used at one time, without the advantages provided by a flooded stage, tracks, rockers, "water ripple machines" and other modern contrivances.

Warner Bros. did not believe in building practical ships and filming at sea — as, for example, MGM had for *Mutiny on the Bounty* (1935). Too often, such enterprises were plagued by weather delays, seasickness, temperamental outbursts, and other problems that could cost considerable time and money. This marine stage allowed for shooting sea pictures under totally controlled conditions. The studio planned to film *The Sea Wolf, Captain Horatio Hornblower,* and *John Paul Jones* on the stage in the immediate future, but only the first of these pictures was completed as scheduled. After America entered World War II, the studio suspended plans for expensive period nautical films, and in May of 1952, Stage 21 was destroyed by fire. Thus, *Hornblower* (1951) and *John Paul Jones* (1959) were filmed in England and Spain, respectively.

In November, casting for *The Sea Hawk* began in earnest. Flynn, of course, was always figured for the lead role, as the picture had initially been designed as a vehicle for him. But back in July, Wallis had written to Curtiz, "I want to make a complete, thorough test of Dennis Morgan in the character of the leading role for *The Sea Hawk*... You will have [contract players]



Stage 7 at Warners. Left to right: unidentified crew members, Flora Robson, Claude Rains, Sol Polito, ASC, assistant cameraman Frank Evans, camera operator Al Greene, assistant director Jack Sullivan, associate producer Henry Blanke. Standing above the camera is director Michael Curtiz. (Courtesy of Bison Archives.)

Brenda Marshall or Jane Bryan work with him in the girl's scenes..."

Wallis' request was no doubt the result of one of the many recurring battles between Flynn and Jack L. Warner. Their disagreements generally centered on the kinds of pictures the studio wanted the actor to do, the directors Warner had chosen (Flynn disliked Curtiz intensely, but was more often than not directed by him), and Flynn's insistence that he be allowed to approve his leading ladies. In any case, nothing changed after Morgan was tested; Flynn was still scheduled for the temporarily delayed *Sea Hawk*.

Although originally announced as Flynn's co-star, Olivia de Havilland, who had been popularly paired with him in *Captain Blood, The Charge of the Light Brigade, The Adventures of Robin Hood* and other films, was not cast. Brenda Marshall, one of the studio's acquired players, was being given a buildup. In her first film at the studio, *Espionage Agent* (1939), she had essayed the leading female role. *The Sea Hawk* was her second film. Others in consideration for her part included Andrea Leeds, Margaret Lockwood, Jane Bryan, Ida Lupino, and Geraldine Fitzgerald.

For the important role of the queen, the studio wanted Flora Robson, the distinguished British actress of stage and screen, who had played Elizabeth in Alexander Korda's *Fire Over England* (1937). Warners signed her to come to America on a two-picture deal. Claude Rains, under non-exclusive contract to Warners, always had been first choice for Don Alvarez, the Spanish ambassador. Basil Rathbone, who had been teamed with Rains in *Robin Hood*, was originally favored as his cohort in villainy, Lord Wolfingham. But Henry Daniell, the number-two choice, was signed instead. Others on the list of possibilities for Wolfingham were Vincent Price, George Sanders, and Louis Hayward. Alan Hale, as usual, was cast as Flynn's sidekick, and Una O'Connor virtually reprised her *Robin Hood* role as the heroine's companion.

The Sea Hawk was given a 48-day shooting schedule. Due to Flora Robson's commitment to the Broadway production of *Ladies in Retirement*, her scenes had to be shot first. They involved many supporting players who appeared only in the sequences taking place in the palace. These were filmed mostly on Stage 7, where the *Elizabeth and Essex* throne room had been photographed. Art director Grot, who had designed the elaborate settings for that picture, artfully modified them for *The Sea Hawk*, and some of the set units as well as set decorations were re-used according to plan.

As rendered in the film, Queen Elizabeth's palace interiors are not realistic, detailed reproductions of any of the royal palaces of her time. Grot's sets were seemingly enormous, with high ceilings and glossy dark floors. In 1936, Grot said, "I, for one, do not like extremely realistic sets. . . There is a difference

between creating an impression and becoming impressionistic... If the sets should happen to be too realistic, it would detract from the action and the beautiful costumes."

Orry-Kelly designed the costumes for both *Elizabeth and Essex* and *The Sea Hawk,* and was able to revamp some of his earlier creations, in addition to planning new costumes for some of the principals.

Filming began on February 1, 1940. Curtiz's favorite cameraman at the time, Sol Polito, ASC, was shooting in black-and-white. Warners did not make a feature film in the Technicolor process for 21 months during the period between *Elizabeth and Essex* and *Dive Bomber* (1941). Although relatively few Technicolor films were produced at any studio in the late 1930s and early 1940s, this was an unusual period of curtailment for one of the majors. The plan for *The Sea Hawk* had always been to use a considerable amount of stock footage from black-and-white films, which may have been the reason Technicolor was not employed in this particular case.

Curtiz and Polito loved those huge shadows. Queen Elizabeth (Flora Robson) seems to be saying, "Enough, already!" (Photo from author's collection.)

Polito's photography is a superb example of how extraordinary black-and-white can be. He had been with Warners for many years. In fact, according to Walter Blanchard in the June, 1943 issue of *American Cinematographer,* it was Polito who, "back in the early Vitaphone days of sound films, convinced the executives of Warner Bros. Studio that the cinematographer in charge of photographing a picture could be more valuable in a supervising or directorial capacity than he could while actually operating his own camera." Polito was quoted: "In practice, it worked out so successfully that the idea spread quickly throughout the industry... The idea of the Operative Cameraman and the Director of Photography held on."

Beginning with *The Charge of the Light Brigade* (1936) and ending with *This Is the Army* (1943), Polito worked with Curtiz on 13 films — including *The Adventures of Robin Hood* (1938), *Angels With Dirty Faces* (1938), *Dodge City* (1939), and *The Sea Wolf* (1941).

By February 19, the climactic duel between Flynn and Henry Daniell was being filmed — before the palace sets had been finished! In his report to studio production manager Tenny Wright, unit manager Frank Mattison said, "...This duel has turned into a matter of a walk. Mr. Daniell is absolutely helpless, and his close-ups in the duel will be mostly from the elbows up. Mr. Curtiz was greatly discouraged with his results on Saturday, as well as Friday, but there is nothing we can do, as it will be impossible to go back and change to someone else in this part [since so many scenes with Daniell already had been filmed.] The casting office and everyone connected with the picture were duly warned of Mr. Daniell's inability to fence long before the picture started, and we knew of him being taken out of a part in *Romeo and Juliet* [MGM, 1936] because he could not handle a sword..." On March 1, Mattison continued, "The man tries hard, but it has just taken about four extra days to get through this duel."

The duel — an obligatory scene in the Flynn swashbucklers — was choreographed by Belgian fencing master Fred Cavens, who had staged many screen duels, including some of Douglas Fairbanks' in the 1920s. Working with Curtiz, Cavens devised a routine that took Flynn (doubled in some shots by Don Turner) and Daniell (doubled in most shots by Ralph Faulkner or Ned Davenport) from Wolfingham's sitting room in the palace to the balcony, corridor, and main hall. The fight was more furiously paced and edited than the Cavens duels for *Captain Blood* and *Robin Hood,* partly because of the need to double Daniell extensively. Overturned tables and candelabra stands, slashed candles, and huge shadows of the opponents on the wall were used much as they had been in *Robin Hood.*

How Curtiz and Polito loved those dramatic shadows! With no small degree of irony, Polito recalled in 1943 that when he had gotten his first paying job in 1913 as a cameraman for the IMP (Independent Motion Picture) Company, a part of Universal, "Some of the first arcs [had just been introduced]... On one scene I decided to try what we would now call an effect-lighting. That is, I used one of the arcs to cast strong shadows on the set. When the rushes came through, the executives were furious. The shadows, they said, distracted attention from the actors, and ruined the scene! The upshot of it was that I was fired." ☙

(To be concluded in next month's issue.)

Crisp Visuals Lend Ad Extra Crunch

by Mary Hardesty

Cinematographer Tom Lucak graduated from Rochester Institute of Technology with the intent of becoming a still photographer. But for the past 10 years he has been working as a commercial director of photography in tandem with director Steve Oaks. The recently completed "Science Project" is their third Quaker Oats Cap'N Crunch Cereal commercial in the past year and a half. For this latest entry in the campaign, Lucak had one day on Curious Pictures' stage to film elaborate mechanical effects and three-dimensional objects that would be replaced with two-dimensional cell animation in the finished spot.

The 30-second commercial opens in a suburban garage just as a distraught teenager realizes that his science project, which is due the next day, stinks. It's so rotten, in fact, that it literally emits a green, CGI flatulence cloud. Roaring in on a souped-up motorcycle and sporting a custom sparkling-blue CGI helmet, the familiar 2-D animated Cap'N Crunch tells the boy to take heart, and then serves him up a bowl of cereal.

After a few mouthfuls, the kid gets a brilliant idea. The next day in class he unveils his Cap'N Crunch-powered cereal delivery system. The Rube Goldbergian contraption bears a close resemblance to an exercise bike that's hooked up to an hydraulic bicycle pump driving air through a coiled hose. That, in turn, flings bowls of cereal via skateboards to each of his classmates' desk.

"We managed to make it work for about three desks and everyone was very impressed," recalls Lucak of the mechanism built for the task. Not surprisingly, however, throwing bowls of cereal for accuracy can require a few takes to get it right.

"The first take was a miserable failure and we thought we would be there a long time. The machine was a bit over-enthusiastic in its flinging, so we ended up gluing the cereal inside the bowl so not too much of it flew out."

The contraption itself was supposed to look rickety, so its designers intentionally constructed the functional prop to seem very fragile. Three on-stage technicians were required for its operation. "We posed them in such a way that they were either hidden from camera view or situated where they could be blocked out by the cell-animated Cap'N who is driving the machine," says Lucak. "We didn't have to dress them in black, but they did end up being placed in very uncomfortable positions. I think we had to digitally remove part of one of the puppeteers because we couldn't quite hide him."

According to Lucak, the Cap'N Crunch character has somewhat of a formulaic gait during his entrance. "He's usually rolling or walking toward us and the camera is pulling back a bit. He's kind of an unusual cell character in the sense that, not only is he 2-D, but he is supposed to always look 2-D. He's drawn as having a flat head and we never see him in profile. Since his character design actually doesn't have a profile, you have to compose your shots without any profile angles. Also, whenever you're working with a cell character, you don't want to make camera movements that are too extreme or it will make the animator's life difficult."

To that end, Lucak made reference shots using a large cardboard cutout of the seafaring cereal spokesman to help the animators achieve proportionate sizing in the finished spot.

For the opening segment in which Cap'N Crunch rides in on his motorcycle and inspires the lamenting student, Lucak conducted tests with pixilation and undercranking in order to achieve the vehicle's motion. "Our original idea was to pixilate the shot, which would have involved a stop-motion camera shooting one frame at a time," he recalls. But the cinematographer then

thought of using a gradual frame speed change within the shot. "As it turned out, when the shutter was closed down, the undercranking [to 4 fps] was perfectly fine with the director, which saved us a lot of time and money."

Lucak shot the spot with an Arri 535 on Kodak 5293, using Zeiss lenses. The camera's variable mirror shutter — continuously adjustable from 11° to 180° — allowed the desired speed change with precise exposure compensation. Says the cinematographer, "This camera worked fine for this particular shoot, but the one thing I would point out is that it takes a second or so for the camera to go from 24 fps to 4 fps, so we ended up cutting out that transition segment. Because the scene we used it for was only a second and a half in length, we couldn't afford the time to change speeds unless we knew we could remove that footage in post," he continues. "[Making that adjustment in the camera] is nice because you don't have to deal with changing a filter or sliding in some neutral density filtration. I've used this feature on the Arri quite a few times."

Before the shoot, Lucak conferred with the CGI technicians and found that they needed something moderately dark to function as a background for the putrid green cloud seen in the opening shot.

"The amount of CG in this spot is minimal — just the green cloud and the Cap'N's helmet — but it pays to have a little understanding of what these people do, so you don't do something that will make their job more difficult," says Lucak, who likes to oversee his work straight through to postproduction. "If I can, I always try to at least follow the job through the transfer process. I'm always amazed at how much control is exercised after the shoot. If a colorist has a different idea than you, he can alter your work significantly."

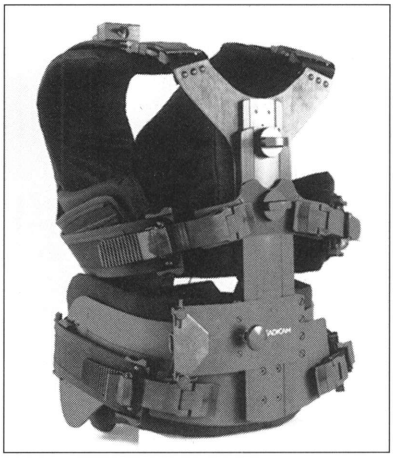
Credits

"Science Project"
Client: Quaker Oats Cap'N Crunch Cereal
Cinematographer: Tom Lucak
Agency: Bayer Bess Vanderwarker (Chicago, IL)
Production Company: Curious Pictures (provided live action, special effects, CG, and animation)
Director: Steve Oaks

compiled by Andrew O. Thompson

Cinema Products' ELITE Steadicam

Cinema Products has announced a new Master Series Steadicam. Its brighter, higher-contrast image monitor has been designed to accommodate cameras equipped with Vidiflex, Cinema Products' new fiber optic video tap and ensures critical focusing capability by the operator. Its patented gimbal system design permits the operator to hold the handgrip closer to the unit's center of gravity for more precise camera control. A completely redesigned stabilizer arm allows one to adjust support for cameras of various weights while the unit is in use. The arm can support cameras weighing from 20 to 45 pounds with uniform support from the lowest to highest boom position. A redesigned, narrower sled composed of composite materials provides a lightweight but extremely strong structure. Quick-release lock rings on the post allows rapid adjustment without tools. It also sports a five amp-hour nickel-cadmium battery pack and a 12/24 volt-switcher option with twice the capacity of previous units and greater than 90% operating efficiency.

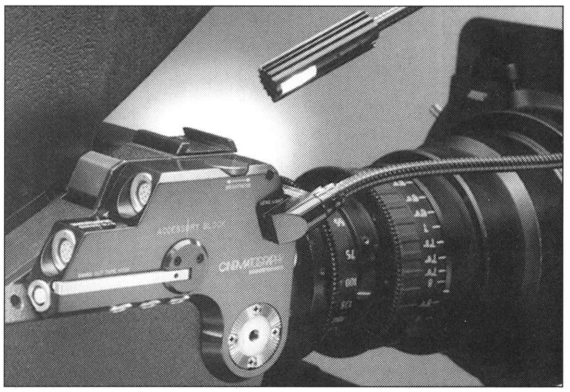


Cinema Products Corporation, (310) 836-7991, FAX (310) 836-9512.

Cinematography Electronics Syncromark Laser System and Accessory Block

Cinematography Electronics' Syncromark Laser System produces a visible laser spot that is synchronized to the shutter of a motion picture camera. The bright laser spot will not appear on film but can be easily seen by the entire crew, and in the camera eyepiece while the camera is running. It's ideal for marking an actor's position, a focus point, or reference point for camera position without the visual restrictions of grip tape. The laser control provides the necessary interface to synchronize up to three laser pointers with a camera. The lasers will be on and properly synchronized while the camera is running. The laser pointer is a small versatile module which emits a bright red laser spot. It can be attached directly to the laser control or remotely located and connected with an accessory cable. Two or more laser beams can be crossed to mark the position of a hand-held object. This system is compatible with all major motion picture cameras.

CE's Accessory Block allows the use of many accessories on the Arri 35-3 camera without the usual tangle of cables associated with standard junction boxes. Its stylish, low-profile shape mounts to the right side contour of the camera and features seven connectors, a swing-out tape hook, an Arri-style threaded rosette, a lens light socket and brightness control knob. It has three Fischer 11-pin connectors that provide all the camera signals and are used for devices such as camera speed controls, laser pointers, lens controls, remote camera on/off switches, remote tachometers and footage counter. Three Fischer 3-pin connectors and a Fischer 2-pin connector provide power for devices such as video tapes, video monitors and eyepiece heaters. All connectors have self-resetting circuit protection to guard against shorts or wiring errors.



CE also offers a high-intensity Lens Light that plugs into a dedicated 4-pin socket on the front edge of the accessory block. Its flexible 20-inch gooseneck

allows the bright halogen lamp to be positioned above the work area. Its intensity is adjusted with the brightness control knob located on the top of the Accessory Block. The combination of circuitry and a 12-volt lamp allows the light to operate efficiently on either 12- or 24-volt systems.

Cinematography Electronics Inc., (818) 706-3334, FAX (818) 706-3335.

Arriflex High-Speed Camera, Variable Primes and Universal Lightweight Matte Box

The Arriflex Corporation has announced the delivery of their new 435 35mm MOS camera. It combines advanced electronics with mechanical and optical excellence in a compact, modular design. Featuring a high-quality viewing system and precision movement, it is compatible with many Arriflex 535 system accessories and components, as well as with widely available magazines from previous Arriflex cameras, the 35-3 and the 2C. The 435 adapts easily for a Super 35 format, and is capable of high-speed operation to 150 frames per second. A mechanically adjustable shutter is standard. Options include an electronically adjustable shutter, ArriGlow frame illumination, a 100% video finder for remote applications, and time code capability. In its standard configuration without mag or lens, the camera weighs only 14.2 pounds.

The new range of Arri Variable Primes covers a continuous focal range from 16mm to 105mm with just three high-speed (T2.2) lenses. The variable primes (developed in cooperation with Carl Zeiss) offer higher quality in resolution, contrast, freedom of distortion and vignetting even compared to fixed focal-range lenses. They also feature the following specific characteristics: full-coverage of silent format; interior focusing with fixed front group; integrated gear rings for lens control system operation; large scales in feet/meters which can be read horizontally from both sides and rectangular front mask to prevent reflections and stray light.

Arriflex's new Universal Lightweight (4" x 5.65") MB-19 Matte Box system is developed especially for the Arri 16 SR camera systems and for professional video cameras. It's compact and made of special lightweight material for use on its support system, particularly for handheld camera operation. Full coverage of Super 16 is guaranteed down to a lens focal length of 6mm. In its standard configuration, the MB-19 comes with a rotatable filter stage which accommodates two 4" x 5.65" filter frames. A stackable filter stage for both one additional 4" x 5.65" filter and one 138mm round filter is available. The MB-19 incorporates most features of standard production matte boxes, such as swing-away bracket, horizontal fine adjustment for alignment with lens, and both vertical and horizontal 4" x 4" filter frames. For universal use of the MB-19, adapters are available for both 19mm and 15mm bridgeplate support systems.

Arriflex Corporation, (914) 353-1400, FAX (914) 425-1250.

LTM's Lunix IV

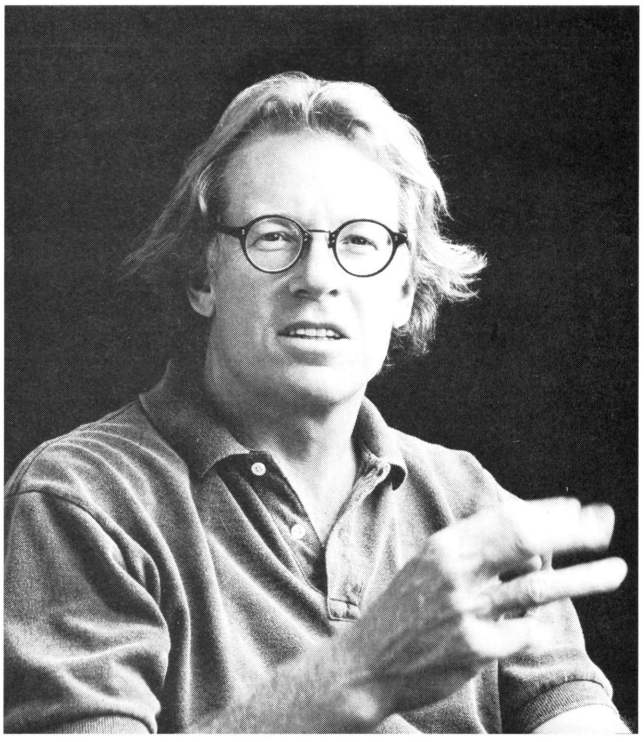
LTM Lighting's Lunix IV is a 6' 6," laminated-textile helium-filled balloon fitted with an internal 4K tungsten bulb/socket assembly. With an operating height of 15 to 50 feet, it floats overhead to provide powerful yet diffused, shadowless fill light without the necessity of cumbersome stands, pipes or hanging brackets. Weighing only a few pounds, it provides strong and homogenous lighting over 360 degrees. It is also available in 8K tungsten and HMI configurations. The light fixture is ideal for filming locations where rigging lights is too difficult or time-consuming, such as in churches, ballrooms, hotel lobbies and courthouses. The Lunix's helium gas is inert, but in case of spark, the floating fixture's electrical supply is automatically switched off.

LTM Lighting, (800) 762-4291, FAX (818) 767-1442.

Chrosziel Modular Compact Mattebox

Band Pro Film/Video introduces the a new, modular Chrosziel Compact Mattebox that accepts an entire family of bellows front housings — from 4:3 and Super 16 to 16:9 and wide angle. This new design makes it possible to remove one front housing and mount another in seconds. The rear portion of the mattebox will incorporate three or more filter trays in various combinations. Stack-on filers are also available. To meet the exacting standards of digital cinematography, designer Alfred

Eric Saarinen has been directing TV commercials since 1985, for such clients as Coca Cola, Kodak, Jamaica Tourism, Jeep, Levis, Mercedes Benz, Miller Beer, Porsche and Reebok. He won the 1990 Eastman Kodak Clio Award for Best Cinematography; and he was named 1990 Director Of The Year by Adweek. He is a partner at Plum Productions.



"For a deBeers diamonds commercial, I needed to romanticize reality to an extreme degree – on the underlying assumption that people who buy diamonds as gifts are temporarily out of their minds," says Eric Saarinen.

Great distortion

"I taped a single-element diopter to a bellows and shot some tests with a Nikon. Huge amounts of spherical and chromatic distortion and flare, which was great. But no focussing, no iris, no marked f/stops. When I took the idea to Clairmont, Denny and his people took an immediate interest."

Custom rig

"They machined links so we could join two different kinds of Nikon bellows system together. And they built bridge adapters, to mount those different bellows onto extra-long ARRI rods. They put PL mounts on one end of the bellows, 52mm filter threads on the other."

"At Clairmont, they don't just tell me what they have. They ask me what I'll need; then they design and build it," says Director/Cameraman Eric Saarinen

Free testing

"I spent several days at Clairmont, experimenting and testing, with their help. They let me use one of their cameras, to shoot tests in a rose garden. No charge."

Stacked diopters

"By altering the bellows length and stacking various 52mm diopters, I got different focal lengths. The f/stop was bellows length divided by lens diameter. We focussed and framed by moving the camera and bellows back or forward until the image was the right size and as sharp as it would ever be."

Wooden case

"It became quite an elaborate system. Clairmont put it all in a foam-cutout wooden case for me. Probably about fifty parts, including positive and meniscus diopters, 85 and ND filters, rods, adapters, tape measures and so on."

Impressionist

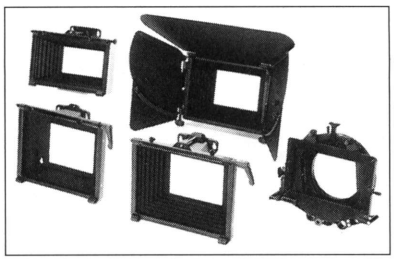
"We shot people and scenics in Germany and the South of France. People at sidewalk cafes, on cobbled streets at night. The results were suitably impressionistic and romantic."

Helpful

"That job was just one of many on which I got singular help from Denny," says Mr. Saarinen. "Clairmont takes over where the others leave off."

CLAIRMONT CAMERA

North Hollywood and Vancouver
(818) 761-4440 and (604) 984-4563



Chrosziel has added a second arm to the iris rod bracket to ensure dead-on stability. Despite all these features, this configuration is 10% lighter than other 4" x 4" matteboxes.

Band Pro Film/Video, (818) 841-9655, FAX (818) 841-7649.

D-Vision's MPEG Transcoder, FXellerator-II and PCI-Bus Technology

D-Vision Systems, Inc. has introduced its new FXellerator and PCI Digital add-on options for its Post SUITE family of non-linear Windows NT workstations. FXellerator produces advanced real-time DVE's (digital video effects) on two simultaneous streams of CCIR-601 video within its open-architecture strategy. There are three separate, easily upgradable FXellerator-II modules: FX-II/T for transitions; FX-00II/DX for customized DVE effects; and FX-II/3D for advanced 3-D effects. The FX-II/T option enables editors to create, and play back in real-time, PostSUITE basic effects (i.e. wipes, fades and dissolves) and pre-defined DVE transitions without the need to render. This option also greatly expands the number of transition effects possible with PostSUITE, and enhances the flexibility in defining and modifying a border width, color and softness/hardness. The FX-II/T option consists of D-Vision's PCI Digital Video Board-II (two PCI boards that replace the earlier EISA board configuration) and the FX-II/T software driver.

The FX-II/DX option enables editors to create, and play back in real-time, customized transitions and DVE's using the new D-Vision VideoSPACE Motion Path Keyframe editor. The VideoSPACE editor is tightly integrated with the Post SUITE Time Line to allow editors to assign video or graphics tracks to individual objects and define motion paths for each object. Using wireframe construction techniques and spline-based motion path keyframes, an object's motion path can be easily defined along with acceleration curves to produce and unlimited number of dynamic DVEs in real-time.

VideoSPACE allows scaling, rotation, spinning and repositioning of any video or graphic channel along the x,y or z axis. Each layer is composited into the final result in real-time using anti-aliased alpha/chroma/luma keying. D-Vision's FX-II/DX also enables users to create scrolling titles and credits in real-time.

The FX-II/3D option enables editors to create and playback highly-accelerated 3-D DVEs with definable lighting and shading. It allows a large variety of DVEs, including rotating cubes, video mapping on objects with D-borders, rotating spheres and orbiting.

D-Vision also introduced two new MPEG Transcoder options for its non-linear editing workstations: the D-Vision MPEG-1 Transcoder Option for MPEG-1 file formats, and the D-Vision MPEG-2 Transcoder Option for both MPEG-1 and MPEG-2 file formats. The transcoder delivers real-time high-quality MPEG-1 and/or MPEG-2 directly from a D-Vision Post SUITE hard disk. It transcodes the PostSUITE MPEG video via the XCCIR-601 serial I/O to produce the highest possible image quality in an MPEG file. In addition, the D-Vision Transcoder simultaneously encodes MPEG audio via XLR balanced or RCA unbalanced connections for high quality audio. Video and audio transcoding is performed in real-time without the need to wait for the encoding process.

Key features for both transcoder options include real-time MPEG encoding/previewing and playback, flexible compression data rates, analog and digital video inputs including composite, S-Video, component analog and optional digital serial, and compression multiplexing in system, program or transport streams.

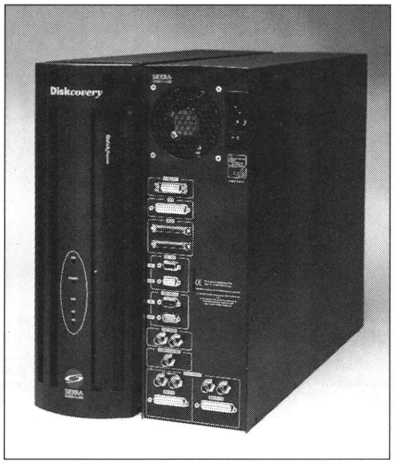
D-Vision Systems, (800) 8DVISION, FAX (312) 714-1405.

HEPA Filter

Allen Products Company is now offering a HEPA (high-efficiency particulate air) filter as part of the dry box system in its ECN 2 color negative processors. Recirculated air from the dry box goes through the HEPA filter, a process by which 95% of particulate matter—down to .3 microns — is removed. This

standard is especially important for color negative film processing and when film is transferred via digital format to videotape. Allen Products has also included further aids to help processing labs and postproduction facilities have the cleanest film output possible. First is the use of Noryl(R) for film rollers, which helps ease edge wear, thus significantly reducing collection of dust in the dry box. Second are the particle transfer rollers (PTRs), located at the end of the dry box just before take up, which are now included as standard equipment on all ECN 2 machines.

Allen Products, (203) 878-7454, FAX (203) 877-6346.



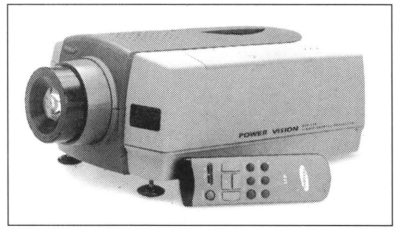
SDL Introduces Diskcovery

Sierra Design Labs has introduced Diskcovery, a digital video disk recorder from the makers of Quickframe. It provides a desktop DDR that is feature-packed and open to a full range of networking and expansion options to grow with the needs of its users. Standard with three minutes' worth of 4:2:2 or 4:2:2:4 component digital video recording time (expandable to 8 minutes), its features include full RS422 implementation, including frame-accurate VTR control, an interpolar for smooth slow motion and color video monitoring output. Data can be configured for 8- or 10-bit pixel, 525- or 625-line data formats depending on user applications. Source time code is also available. Diskcovery offers full compatibility with existing software applications, serial and parallel digital video inputs and outputs. Options include Analogframer for interface with analog devices and Audioframer for 4-channel AES/EBU audio capability. Fast SCSI target transfers of 3 fps and full Ethernet capabili-

ties come standard with the system.

It's packaged in a small chassis built to minimize noise levels for quiet office operations and can be placed vertically as a tower near a desktop workstation or horizontally mounted in a 3 RU standard rack space. Since it's based on unmodified off-the-shelf SCSI drive technology, there is a very high reliability factor with an average of 800,000 hours between disk failures. An upward path is built-in for Diskcovery owners. Equipped with current Quickfame utilities and industry standard Quickframe drivers, the system is easily upgradable to the Quickframe product line. It can be expanded for additional minutes of storage and can be upgraded to take advantage of Sierra's video server options, including the SCSI framer and the NFS server.

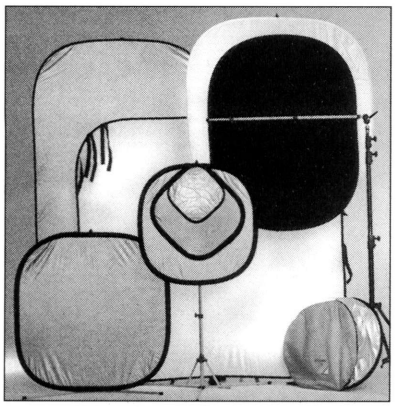
Sierra Design Labs, (702) 831-7837, e-mail sroach@sdlabs.



Samsung Portable Color Video Projector

Samsung Opto-Electronics America has introduced the SLP-3100 Liquid Crystal Display (LCD) video projector. It's compact (8.5" x 14.75" x 6'), lightweight (9 lbs.), has a built-in handle for easy carrying and includes a standard ¼-20 mounting socket on the base of the unit. It also features a 3.1" active matrix TFT LCD panel. A resolution of 350 TV lines allows projection of sharp images ranging from 25' to 100' (diagonal) while a 130-watt metal-halide lamp provides a bright picture. An easy-to-use wireless remote control facilitates operation. A built-in speaker with 3-watt output and headphone jack allow integration of audio into any presentation and three audio/video input sources are selectable. An on-screen menu enables the user to easily adjust the volume, brightness, color, sharpness, contrast and tint. Image elevation adjustment is also included. Front or rear-screen projection may be selected.

Samsung Opto-Electronics America, Inc. (201) 902-0347, ext. 121, FAX (201) 902-9342.



Wescott Accessories

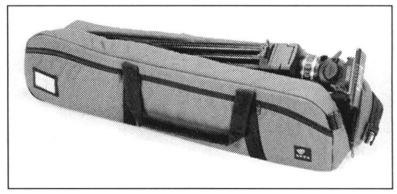
Westcott has developed a Cross Bar Handle for use with its Scrim Jim modular diffusion and reflector panel system. Facilitating easier handling for the entire unit, it attaches to the back of the frame, allowing for the Scrim Jim to be handheld from two points on the back or mounted to a grip head and c-stand. It's made of ½ inch aluminum pipe (from lightweight anodized aircraft aluminum) with heavy-duty welded sides and semi-gloss black-powder-coated finish. The system consists of tubing in two different lengths to create three different-sized diffusers: 42" x 42", 42" x 72" and 72" x 72". The Cross Bar Handle is 42" wide and therefore can only be attached to the small and medium Scrim Jim.

Wescott has also made new addition to its Illuminator line of reflectors. There are three 52" reflectors (silver/white, gold/white and sunlight/white) and a 48" x 72" sunlight/white. Like all reflectors in this line, the units collapse into small, handheld circles and open with the flick of a wrist. Since they lie flat when collapsed, they are easily stored. Each unit is supported by its own frame, so no tubing or disassembly is needed. All reflectors can be used with Wescott's Illuminator mounting arm and standard stands. They can also be positioned in virtually any plane. A clip mechanism on the mounting arm features a strong spring to firmly grip the surface area of the Illuminator frame.

Wescott is now offering a wide range of hand-painted muslin panels in a 6' x 7' Illuminator Plus size. Available in many colors, this background includes an attached 7' apron extending from the bottom. This provides an effective area of 6' x 14', which is suitable for full-length photos. The background also collapses, folds and stores into a circu-

lar bag about 34" in diameter. Four new diagonal backgrounds are available as well in color combinations of aurora, sky blue, light gray and earth.

Wescott, (419) 243-7311.



Tripod Bag

KATA, makers of cases, bags and vests, recently introduced the Tripobag, a fresh solution to the challenge of transporting a tripod with head and panhandle in place. The Tripobag is rugged and lightweight. Its reinforced, padded central compartment protects a tripod's legs and head, while the zipper extends to the entire length of the case for quick and easy retrieval. An additional full-length pocket can be used to stow accessories and other items. There are additional zippered pockets for wallet, notebook and a plastic window for business cards.

Tripobag is reinforced with polypropylene panels and polyurethane foam. Its patented handles have comfortable, extra-long handgrips that allow balanced carrying with or without the head. The ergonomic shoulder strap enables golfbag-style carrying. It comes in two sizes: one for single-stage tripods and one for a double-stage.

KATA, (888) 872-5282, FAX (805) 520-7342.

Sun Tracking Software

Wide Screen Software is now shipping sunPATH, a sun tracking program that's available for the Apple Macintosh. The software tracks the position of the sun for any given day, anywhere on the earth. The program includes a database of 39,000 locations worldwide. It displays the sun's information both on-screen and in a printed report. The information includes a daily summary, the sun's position in 15-minute intervals and a graphical plot of its path during the day. The report is taken on location.

Widescreen Software, (818) 764-3639, e-mail widescreen@ pobox .com.

Clocklike Precision

Director Fina Torres sings the praises of cinematographer Ricardo Aronovich, who lent a skilled eye to her new film *Celestial Clockwork*.

by Brooke Comer

Celestial Clockwork, the new film by Venezuelan filmmaker Fina Torres, is a fantasy-comedy that chronicles the misadventures of Ana (Ariadna Gil), a young Venezuelan who flees her wedding in mid-ceremony and heads to Paris in order to fulfill her dream of becoming an opera singer. Ana's acquaintances — a psychic waiter, an eccentric analyst, and her jealous rival, a crazed post-punk artist named Celeste — alternately help and thwart Ana during her struggle to audition for a film role in the Rossini opera *Cinderella*.

Torres, who left her native city of Caracas to study film in Paris, is well aware of the absurdity that often ensues from the cultural co-mingling of Latin immigrants and Parisian natives. A lover of still photography, she had traveled into the interior of Venezuela to capture the lives of the various indigenous cultures for *El Nacional*, the national paper's weekly magazine. In Paris, she earned a degree from Institut des Hautes Etudes Cinematographiques, and then made such short films as *Un Largo Viaje* and the documentary *Veronique Sanson*.

Torres chose Argentinean cinematographer Ricardo Aronovich (*Providence, Missing*) to capture *Celestial Clockwork*'s palette of busy colors; its warm, vivid look recalls the quirky films of Spanish director Pedro Almodovar.

"Ricardo is an artist, an incredible cinematographer, and he's from Latin American, so I thought he'd understand the color of my film, which is very bold and very South American," says Torres.

Ironically, the film's lighting style turned out to be the one area that Torres and Aronovich disagreed upon initially. Says the director, "I thought that since the film has a strong fantasy element, it should have an artificial kind of light. I didn't want to go with natural light at all. I wanted very strong colors. But Ricardo has one way to light film. He is very respectful of natural light sources. It was the complete opposite of what I'd expected, but I found that he was right. I had put such bright colors into the frame that the artificial light I'd originally envisioned would have made it look vulgar. Ricardo used a soft, fairy-tale light that was subtle, but beautiful."

Aronovich and Torres didn't formulate a shot list, but engaged in a series of discussions, during which each made some sort of artistic compromise. "He adapted to my world of color and emotions while still applying his own method of lighting," says Torres. "He makes a base for the minimum light level, then he creates the direction from windows or other sources. But he arranges things in such a way that you don't have to move the lights around, even if you change the camera angle. He filters with a ProMist, or sometimes a light black ProMist. In exteriors, he always uses an enhancing filter that intensifies any red color in the image."

At first, Torres planned to shoot in the 1.66:1 European standard, but after much wrangling, Aronovich convinced her to use 1.85. Torres' biggest problem with this switch was alternating her framing from a square format to the oblong one. Aronovich wanted to use Panavision equipment on *Celestial Clockwork*, but the camera system was too costly in Paris. Instead, he shot with an Arri BL4 on Fuji 500 and 200 ASA emul-

sions. "I love Fuji because of the way it takes colors," says Torres, who also used their stocks on her 1985 award-winning debut, *Oriana*. "It has a velvety texture that's also very specific."

Aronovich shares Torres' preference for Fuji, and enhanced the stocks' smooth look by using a Cooke zoom lens.

> "...It was very interesting for me to work with such a demanding cinematographer. You can see the textures and the depth in his images even if you're not aware that you see it. You feel it."

"Ricardo finds that the zoom is softer than the normal lenses," says Torres. "And he mostly used it in the 40mm focal length, although a few times we shot at 25mm, 100mm and 150mm. Once, we used a fisheye lens." The 40mm was employed the most often "because Ricardo thinks that it's better to use the same focal length throughout a film. He wanted a very specific image quality that had to be to just to his taste. It was very interesting for me to work with such a demanding cinematographer. You can see the textures and the depth in his images even if you're not aware that you see it. You feel it."

Aronovich has also devised a fixture he calls "the Brazilian light projector," which Torres describes as "his personal way of making the human eye brilliant." The subdued light puts a special reflection in the eye without reflecting in the white portion. "It gives the eye a beautiful depth," says the director. "It's another one of those details that you don't see so much as feel. It gets inside you; you're aware of something nice, but you don't know what it is. These are the details of a good cinematographer. If something's missing, if a shadow is not in the right place, you feel it. It's very subtle, but it's part of the artistic control that the cinematographer wields."

Materials and information regarding East Coast projects and events can be sent to: P.O. Box 123, New York, NY 10021.

Books in Review

by George Turner

Odd Man Out: a Memoir of the Hollywood Ten
by Edward Dmytryk
Southern Illinois University Press, 223 pps., cloth $34.95, paper $14.95

The debacle that can occur when ambitious politicians undertake to wield their might over the movie industry was dramatically illustrated by the grandstanding activities of the House Un-American Activities Committee (HUAC) in the late 1940s and early '50s. Writers recalling those nerve-wracking times almost invariably try to lay the blame on Sen. Joseph McCarthy for HUAC's roughshod stampede through Hollywood. In truth it was Hon. J. Parnell Thomas who chaired the HUAC at the time of the Hollywood "witch-hunts," which began some years before McCarthy started rooting out Communists, both real and imaginary, from Washington, D. C.

Though other books have described those dark days of inquisitions, blacklists and shattered lives, this one was written by Edward Dmytryk, a man caught in the middle of the drama. The director lost his job at RKO because of his youthful involvement with Communism, exiled himself to England for three years, and served a prison sentence as a member of the "Hollywood Ten." Dmytryk then publicly recanted Communism and offered his cooperation to the investigators. Hated by both sides, he tries to put an impartial spin on the situation and seems less bitter than one might expect toward foes and fair-weather friends. He doesn't even gloat about Chairman Thomas being invited to join some of his former interviewees behind high, gray walls.

Dmytryk, who has turned his hand to teaching in recent years, was a mighty good director. His pre-blacklist films include such classic examples of *noir* cinema as *The Devil Commands; Murder, My Sweet; Cornered* and *Crossfire.* While living in England he made *The Hidden Room* and *Give Us This Day.* After the dust from his HUAC adventures settled, he directed *The Caine Mutiny, Raintree County, The Young Lions* and *A Walk on the Wild Side.*

"I count my friends on the fingers of one hand," Dmytryk admits. But a man who made movies millions of people know and love has more friends than he might suspect. Fortunate, too, is a man whose loyal and non-political wife (actress Jean Porter) stood by him through the nightmare and is with him still. His story is important reading for anyone who has tried to make sense of one of Hollywood's more harrowing real-life dramas.

French Films, 1945-1993
by Melissa E. Biggs
McFarland, 365 pps., library binding, $48.50

The best-loved movie to come from France, *Les Enfants du Paradis,* is an elaborate, 385-minute costume drama made in 1943-45 right under the snarling proboscises of the conquering Nazis. Because some members of the company were Jewish and others were members of the Resistance movement, death hovered over the enterprise. It is hardly surprising that this kind of determination would ensure a courageous tradition of cinema. As Biggs, a Francophile from New York, says: "The essence of the country, her art, and her cultural enthusiasm is nowhere better expressed than in her movies."

To represent France's heritage of postwar films, Biggs has selected 403 titles, providing cast and credits, a brief synopsis, some facts and a critique for each. The chosen entries, each of which is allotted more than a half-page of small type, are a mix of art-house classics, works by great directors and popular favorites. The variety of subjects as well as the avoidance of formulaic plotting is astonishing. A good random example is Rene Clements' masterpiece of claustrophobia, *Les Maudits (The Damned),* pho-

tographed in 1947 by Henri Alekan, in which an ill-assorted group of Nazis, dominated by a sadistic homosexual, try to escape to South America in a submarine.

Gathering the essential facts and writing knowledgeable overviews about 403 productions is a formidable task, but the segments are intelligently written and no words are wasted. Stills are scattered through the text. A more insightful tribute to the second Golden Age of French cinema could hardly be packed into a single volume.

Roberto Rossellini
by Peter Brunette
University of California Press,
425 pps., paper, $16.95

The fate of Roberto Rossellini is one suffered by many important filmmakers. He has been called the most influential director of his time and an incompetent whose work is too rough-edged to meet professional standards; his achievements have been idolized beyond reason on the one hand and vilified with equal unreason on the other. Brunette, who knew Rossellini well and has studied many of his pictures not generally available in the U.S., writes here of the director's ideas and films. It is not a biographical work except as applied to the man's body of work over a period of nearly 40 years.

Rossellini had made six short subjects and four features before 1945, when his anti-fascist *Roma, Citta Aperta (Open City),* brought him international fame. Photographed in the streets (because all the studios had been bombed out) on short lengths of film, mixing professional actors Anna Magnani and Aldo Fabrizi with amateurs, the picture had the scrappy look of a newsreel. It was hailed as a new kind of movie and the precursor of a "neo-realism" movement. *Paisan* and *Germany, Year Zero* were similarly acclaimed. Few of his later films were well received, although the author notes subtleties in many of them that makes one wish for a fresh look.

The irony that he became more widely known for his affair with Ingrid Bergman than for his later movies and TV productions lends a tragic aspect to Rossellini's life that is not lost on the author of this insightful career study.

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From the Clubhouse

The ASC recently inducted five new active members into its fold: Michael O'Shea, Don E. FauntLeRoy, Miroslav Ondricek, Willy Kurant and Victor Goss.

Michael D. O'Shea broke into the industry in 1965 as a film loader at Warner Bros. before becoming a first assistant and operator for Howard Schwartz. After serving in that position for several cinematographers, O'Shea spent a number of years as a second-unit cameraman on such films as *Spaceballs, The Goonies, The Lost Boys, Geronimo* and *The Specialist.* In 1990, he began a three-year stint as director of photography on the TV series *Doogie Howser, M.D.,* for which he later received an Emmy nomination. Comedic director Mel Brooks gave O'Shea his big-screen break on the 1993 spoof *Robin Hood: Men in Tights* and the duo again collaborated on *Dracula: Dead and Loving It.* O'Shea has also photographed episodes for such TV series as *Raising Cain, Weird Science* and *Sweet Justice.*

Don E. FauntLeRoy attended USC with the intention of playing baseball, but changed his mind in the summer of 1972 when he took a job as a driver at Modern Film Effects, his father's optical house. On one of his early jobs, the miniseries *How the West Was Won,* he met first assistant Dick Meinardes, who not only gave FauntLeRoy more work but introduced him to Harry Stradling Jr., ASC. FauntLeRoy ended up assisting the cinematographer on 11 films over the course of 12 years. He also assisted and operated for such ASC members as Haskell Wexler, Ralph Woolsey, Richard C. Glouner, and Roy Wagner. His first gig as a director of photography (on an ABC Afterschool Special) led to work on the features *Munchies, Body Chemistry III* and *Felony* and such TV movies such as *Mother of the Bride, The Margaret Mitchell Story* and *The Stepford Husbands.* FauntLeRoy also shot the mini-series *North and South III: Heaven and Hell,* for which he received a 1994 ASC Award nomination. His current project is the feature *Lily Dale,* starring Mary Stuart Masterson and Sam Shepard.

Miroslav Ondricek began his career in 1953 at the Barrandov Film studios in his native Czechoslovakia, where he worked as a camera assistant along with then-future ASC member George Koblasa. He later attended the Prague Film School. In 1965, Ondricek forged a long-standing relationship with director Milos Forman while shooting *Loves of a Blonde.* The pair later collaborated on *The Fireman's Ball, Taking Off, Hair* and *Valmont,* as well as *Ragtime* (1981) and *Amadeus* (1984), for which Ondricek earned Academy Award nominations. His resume also includes such films as *If, Slaughterhouse Five, O Lucky Man, The World According to Garp, F/X, Silkwood, Awakenings* and *A League of Their Own.* Ondricek, who resides in Prague, recently completed *The Preacher's Wife,* starring Whitney Houston and Denzel Washington.

Willy Kurant is one of the founders of the French New Wave. During a career that spans more than thirty years, the Belgian cinematographer has shot over 50 features and documentaries. Some of his credits include Jean-Luc Godard's 1966 masterpiece *Masculin-Feminin,* Agnes Varda's *Les Creatures, Le Depart* for Jerry Skolimowski, and Orson Welles' unfinished project *The Deep.* Kurant's varied resume also includes such disparate projects as the comedy *Harper Valley PTA* and the documentary *Pink Floyd at Pompeii.* In 1986, he photographed Maurice Pialat's *Soleil de Satan,* the winner of the Palme d'Or at that year's Cannes Film Festival. In 1990, he shot *China Moon* for John Bailey, ASC. Kurant's most recent projects include *White Man's Burden* and *The Babysitter Club.*

Victor Goss was introduced to the movies while spending hours in the projection booth of a drive-in theater owned by his father in Santa Maria, CA. He later studied photography, theater arts, journalism and psychology at Glendale City College and the University of Hawaii. In 1967, Goss was drafted into the Army, where he projected scores of USO movies for the 588th Signal Company in Vietnam. He soon began taking notes on the lighting, composition, camera angles, story and mood of each film. It was Richard Lester's 1965 black-and-white comedy *The Knack* (photographed by David Watkin, BSC) that awakened him to the true art of cinematography. Goss returned to Hollywood to work with his father, who was then employed as a gaffer. After learning the finer points of lighting from him, Goss soon began shooting and directing television commercials. His first union job was with Vilmos Zsigmond, ASC's second unit on *Table for Five.* Goss got his break as director of photography on the TV series *Gabriel's Fire* (later retitled *Pros and Cons*). In addition to the feature film *Huck and the King of Hearts,* Goss has photographed such series as *Bakersfield P.D., Under Suspicion* and the pilot episode of *Strange Luck.*

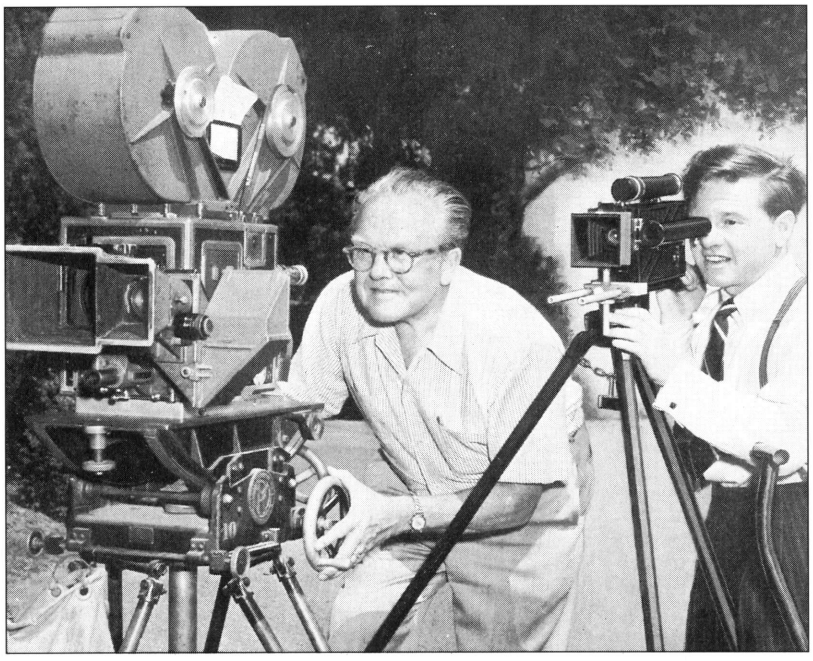
Dinner Meeting Discussion on Image Manipulation

On May 20th, ASC members Robert Primes and Roger Deakins played co-hosts to a discussion entitled "In Memory of the Chemical Process" at a dinner meeting held at the ASC Clubhouse in Hollywood. Shown prior to the talk were clips from *Natural Born Killers* (photographed by Robert Richardson, ASC), *I Am Cuba* (Sergei Urusevsky) and *The French Lieutenant's Woman* (Freddie Francis, BSC), films that Deakins chose as examples of image manipulation.

In his opening remarks, Deakins offered special praise to British cinematographer Oswald Morris, BSC, whose use of the three-strip Technicolor process imbued John Huston's *Moby Dick* with a tint similar to that of weathered parchment. Deakins then screened examples of his own work on *1984.* To convey the bleak pallor blanketing George Orwell's Oceania, the filmmakers planned to shoot the film in black-and-white or to utilize a black-and-white printer overlay. Those options were nixed by the studio, so the film's unique look was accomplished through the utilization of a silver-retention process that skips the bleach bath during the print's development. Deakins noted that since certain countries (such as Brazil) did not subject their prints to this process, some audiences viewed a rather vivid totalitarian state.

Continued on page 112

The Birth of Home Movies



This photo was snapped in 1948 at Metro-Goldwyn-Mayer during the making of the hit musical *Words and Music.* The gentleman setting up Technicolor camera #10 is Charles Rosher, one of the founders of the American Society of Cinematographers and co-winner of the first Academy Award for cinematography in 1927-8. The gentleman at the right with the 16mm Cine Kodak Special is *Words and Music* star Mickey Rooney.

By that time, more than a million families in the United States had taken up the home-movie hobby since the introduction of 16mm film some 25 years earlier, in July of 1923. Manufactured by Kodak, the film was a safety stock, unlike the highly flammable 35mm nitrate negative used by professionals. It was a black-and-white reversal film, in which the image was reversed from negative to positive during processing. Bell and Howell beat Kodak to the market with their 16mm Filmo camera, but Kodak offered a complete package of camera, film and projector. The hobby was embraced by actors, directors and even cinematographers, including Rosher, James Wong Howe, ASC and Daniel B. Clark, ASC.

In 1932, 8mm movie equipment and film were made available. Home movies became feasible for many families, even with the Depression in full swing. Univex made an 8mm camera with an f5.6 lens that cost under $10. Those whose ambition and budget would permit it used 16mm equipment. Mickey's Cine Special cost several hundred bucks. Note that it is equipped with a matte box, a sports finder on top and a parallax-free finder on the side.

The first color film for amateurs, Kodacolor, was introduced in 1928. Its three-color process involved photographing and projecting a special black-and-white film through three color filters. The more practical Kodachrome arrived in 1935 and became the favorite film of the amateurs.

In 1948, there were some 775,000 8mm cameras and 325,000 16mm cameras being used in the U. S. alone.

And now it's those easy-to-use video cameras that enchant the millions.

— G. Turner

Dinner meeting, continued from page 111.

Vilmos Zsigmond, ASC then took the podium, and, with his singular comedic flair, spoke about his first experiences with "flashing" film on Robert Altman's *McCabe and Mrs. Miller* and *The Long Goodbye.* Altman favored the process because he felt that Kodak's stocks offered an overly bright color palette for the mood of these films. At that time, equipment such as the Lightflex and Panaflasher did not exist and flashing had to be done in the lab, making it a somewhat risky endeavor.

While shooting *McCabe and Mrs. Miller,* Zsigmond soon became weary of the resulting look and recalls the studio executives going into conniptions upon seeing his desaturated dailies. But Altman vigorously defended their visual strategy, succinctly responding: "The negative is perfect!" Said the cinematographer, "I remember thinking, 'There's no way any audience is going to look at this for two hours.' But I didn't want to tell Robert that. So I gradually added a little exposure and cut down the amount of flashing." When Altman caught wind of what Zsigmond was doing, the director went ballistic, only to become tired of the desaturated look himself two to three months later.

After Zsigmond's remarks, the evening then moved into the digital age as co-host Primes presented clips from his recent TV movie *A Friend's Betrayal.* Using several before and after examples, the cinematographer demonstrated how he used DaVinci Power Windows to adjust for color gradation and exposure in post. In one sequence, Primes digitally added a graduated filter to the top and bottom of the frame, with the software tracking along a specified path to allow a pan to the right. In another scene, detail elements were brought out in one portion of a silhouette shot, illustrating how Power Windows could focus on key segments in the frame.

In discussing image manipulation through the telecine process, recent ASC Award recipient Aaron Schneider displayed clips from his reel, including a montage of scenes from the courtroom drama *Murder One.* Points of discussion included Schneider's use of Kodak's new Primetime stock as well as his transition into the feature realm, where he cannot rely on the telecine process in his imagemaking.

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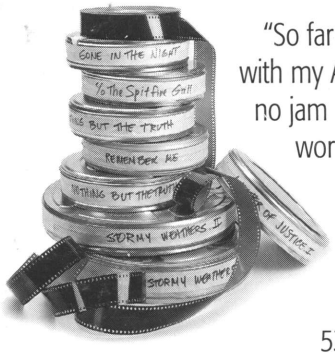

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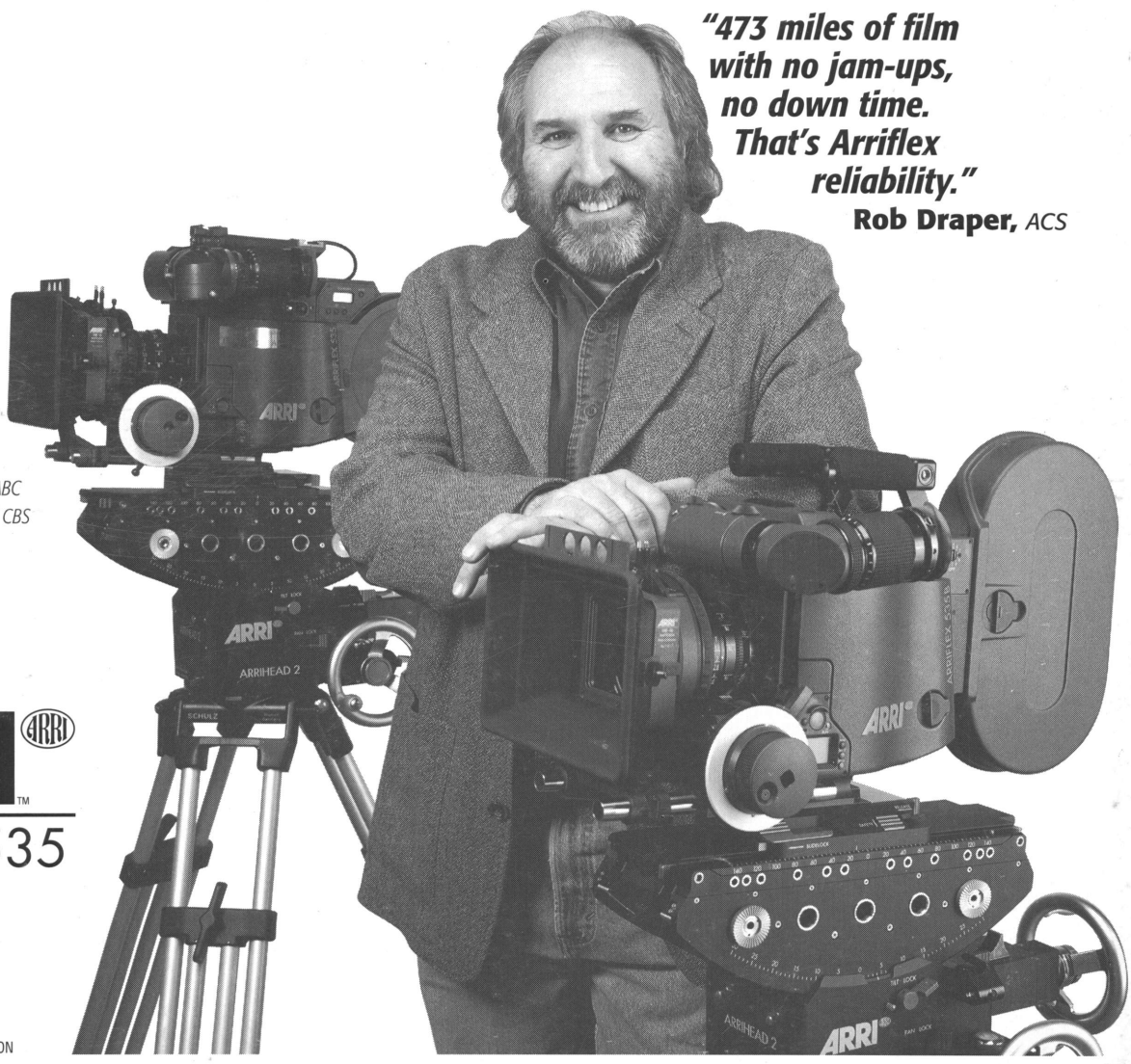

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